

# SUPPLEMENT.

## The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2357.—VOL. L.

LONDON, SATURDAY, OCTOBER 23, 1880.

PRICE (WITH THE JOURNAL) SIXPENCE.  
PER ANNUM, BY POST, £1 4s.

### "Kainotomon" Rock Drill

SELECTED BY THE  
BRITISH, PRUSSIAN, & SAXON  
GOVERNMENTS.

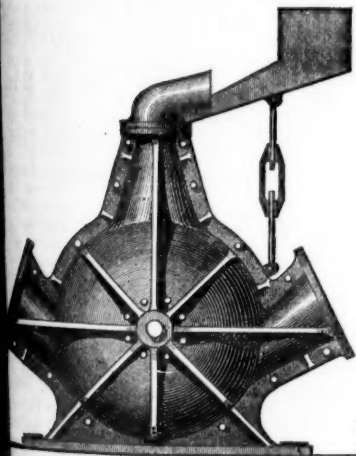


SUPERIOR AIR COMPRESSORS.  
T. A. WARRINGTON,  
30, King-street, Cheapside, London.

### JORDAN'S PATENT PULVERISING MACHINE,

FOR REDUCING  
MINERALS, CHEMICALS, CEMENTS, CEREALS, &c

T. B. JORDAN AND SON,  
52, GRACECHURCH STREET, LONDON.



SIMPLE.  
DURABLE.  
EFFECTIVE.

—  
OTHER  
SPECIALITIES.  
GOLD  
REDUCING PLANT.  
HAND-POWER  
ROCK DRILLS  
GENERAL  
MINING PLANT  
Illustrated Cata-  
logues on applica-  
tion.



### PHOSPHOR BRONZE.

REGISTERED TRADE MARKS.

THE BEST METAL FOR  
BEARINGS, SLIDE VALVES,  
PUMPS,  
TEAM FITTINGS, &c.,

Supplied in Ingots or Castings.

WIRE, SHEETS, TUBES, &c.

For Ingot Quotations, see Prices Current, page 6.

Sole Manufacturers:

THE PHOSPHOR BRONZE COMPANY

(LIMITED):

100, NEW and EMERSON STREETS, SOUTHWARK,  
LONDON, S.E.

### IMPROVED PATENT INGERSOLL ROCK DRILL MEDALS AND HIGHEST AWARDS.

American Institute, 1872.  
American Institute, 1873.  
London International Exhibition, 1874.  
Manchester Scientific Society, 1875.  
Leeds Exhibition, 1875.  
Royal Cornwall Polytechnic, 1875.

Rio de Janeiro Exhibition, 1875.  
Australia Brisbane Exhibition, 1876.  
Philadelphia Exhibition, 1876.  
Royal Cornwall Polytechnic, 1877.  
Mining Institute of Cornwall, 1877.  
Paris Exhibition, 1878.

LE GROS, MAYNE, LEAVER, & CO.,  
60, Queen Victoria Street, London, E.C.

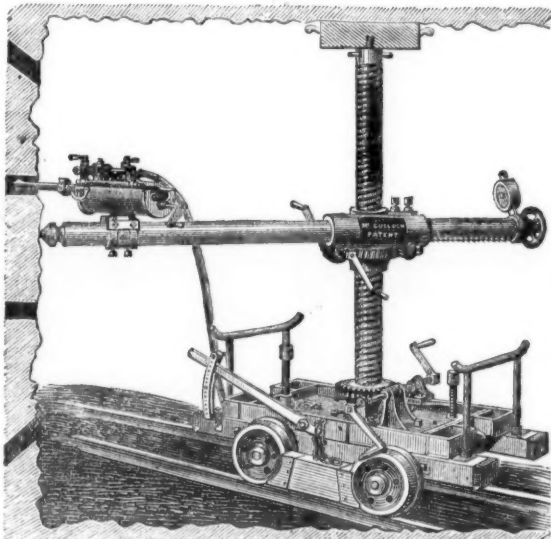
SOLE AGENTS FOR THE

### DUSSELDORF

WROUGHT IRON STEAM TUBE WORKS.

TUBES FOR BOILERS, PERKINS'S, and other HOT-WATER SYSTEMS.  
For Catalogues of Rock Drills, Air Compressors, Steel or Iron Steam Tubes,  
Boiler Tubes, Perkins's Tubes, Pneumatic Tubes, Boring Tubes, and all kinds of  
Machinery and Mining Plant, apply—  
60, QUEEN VICTORIA STREET, E.C.

THOS. LARMUTH AND CO.,  
Todleben Ironworks,  
SALFORD, MANCHESTER.  
MAKERS OF STURGEON'S NEW  
PATENT TRUNK AIR COMPRESSOR,  
WINDING AND PUMPING ENGINES. VENTILA-  
TING AND BLOWING FANS.  
TURBINE WATER-WHEELS.



SOLE MAKERS OF MC CULLOCH'S  
PATENT ROCK DRILL CARRIAGE.

STEAM CRANES. OVERHEAD TRAVELLERS  
ENDLESS CHAIN ELEVATORS, AND FEED SHEETS  
TRAVERSERS AND TURNABLES.

### The Barrow Rock Drill

COMPANY

SUPPLY their CELEBRATED ROCK DRILLS, AIR COM-  
PRESSORS, &c., and all NECESSARY APPLIANCES for  
working the said Drills.

Their DRILLS have most satisfactorily stood the TEST  
of LONG and CONTINUOUS WORK in the HARDEST  
KNOWN ROCK in numerous mines in Great Britain and  
other countries, clearly proving their DURABILITY and  
POWER.

The DRILLS are exceedingly STRONG, LIGHT, SIMPLE,  
and adapted for ends, stopes, quarries, and the sinking of  
shafts. They can be worked by any miner.

For PRICES, Particulars and Reports of Successful and  
Economical Working, apply to—

LOAM AND SON,  
LISKEARD, CORNWALL.

### ALEX. WILSON & CO.,

VAUXHALL IRONWORKS.

LONDON, S.W.,

MANUFACTURERS OF

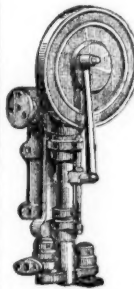
THE VAUXHALL DONKEY PUMPS.

THE EXCELSIOR DIRECT-ACTING  
PUMPS.

Air Compressors.

Winding Engines.

HOISTING MACHINERY.



ILLUSTRATED AND PRICED CATALOGUES ON APPLICATION.

ESTABLISHED 1820.

### JOSH. COOKE AND CO., SAFETY LAMP

AND  
GAUZE MANUFACTORY.

Honourable Mention, Paris Exhibition, 1878.

Illustrated Price Lists free, by post or otherwise.

MIDLAND DAVY LAMP WORKS,

Belmont Passage, 203, Lawley-street,

BIRMINGHAM.

Makers of Williamson's Double Safety Lamp  
Williamson's Patent Double Safety Lamp shown half in  
section.

Medal—For Improved Invention—London, Kensington, 1874.  
Ditto—Excellence of Workmanship—Wrexham, 1876.

ESTABLISHED 1798.

### ROBERT DAGLISH & CO. SPECIALITIES:

Boilers, Bridges, Bessemer Plant, Chemical Plant.  
ENGINES: Hauling, Marine, Pumping, Stationary, and Winding  
GLASS MACHINERY.

MINING MACHINERY for COAL, COPPER, GOLD, and ROC  
SALT

WHEELS.

Bevel, Change, Mitre, Spur, and Worm.

St. Helen's Engine, Boiler, and Bridge Works and  
Foundry, Lancashire.

ELLIS LEVER AND CO.,  
BRATTICE CLOTH MANUFACTURERS,  
WEST GORTON WORKS,  
MANCHESTER.

ESTABLISHED A QUARTER OF A CENTURY

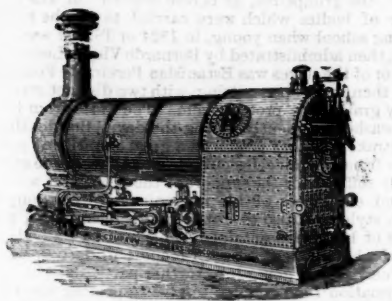


# ROBEY & CO., ENGINEERS, LINCOLN.

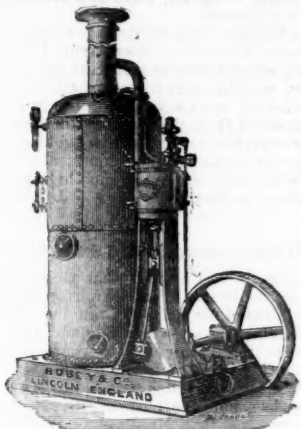
## NOTICE.

TO COLLIERY PROPRIETORS, MINE OWNERS, &c.

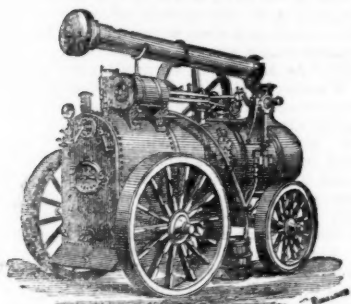
### The Patent "Robey" Mining Engine



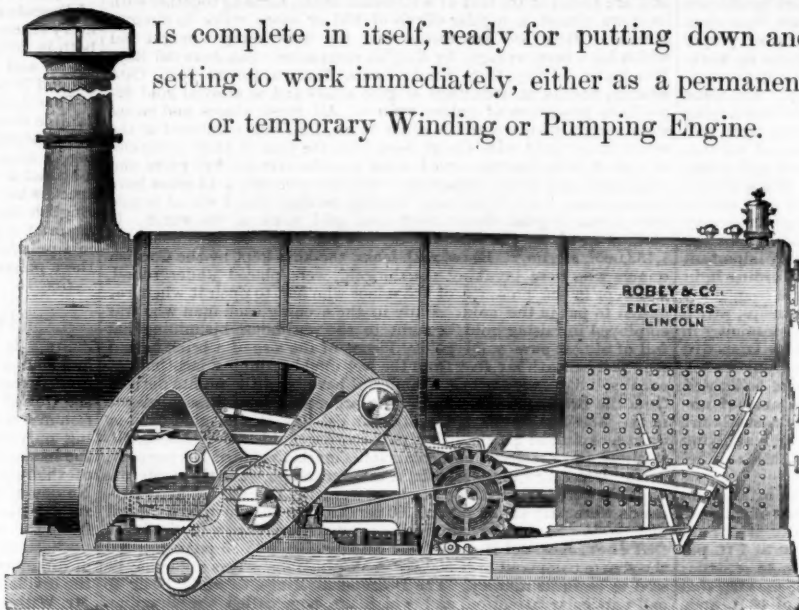
THE PATENT ROBEY FIXED ENGINE AND LOCOMOTIVE BOILER COMBINED 4 to 50-horse power.



VERTICAL STATIONARY STEAM ENGINE AND PATENT BOILER COMBINED, 1 1/2 to 16 horse power.



SUPERIOR PORTABLE ENGINES, 4 to 50-horse power.



Is complete in itself, ready for putting down and setting to work immediately, either as a permanent or temporary Winding or Pumping Engine.

ALL SIZES KEPT IN STOCK, FROM 6 TO 50-H.P. NOMINAL.

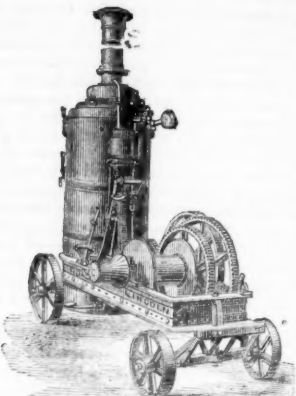
For particulars and prices, apply to the

PATENTEES AND SOLE MANUFACTURERS,

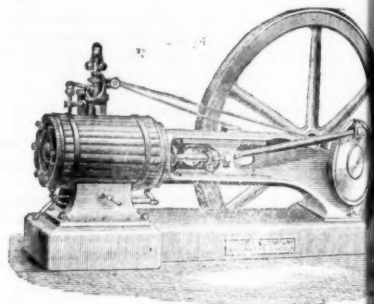
**ROBEY & CO., ENGINEERS, LINCOLN.**



SELF-ACTING CIRCULAR SAW BENCH.



ROBEY & CO. LINCOLN, ENGLAND. IMPROVED BARROW LIFT OR VERTICAL HOISTING ENGINE.



HORIZONTAL FIXED ENGINES, 4 to 60-horse power.

## THE SAVILE-STREET FOUNDRY AND ENGINEERING CO., LIMITED, SHEFFIELD.

STEEL V. CAST IRON.

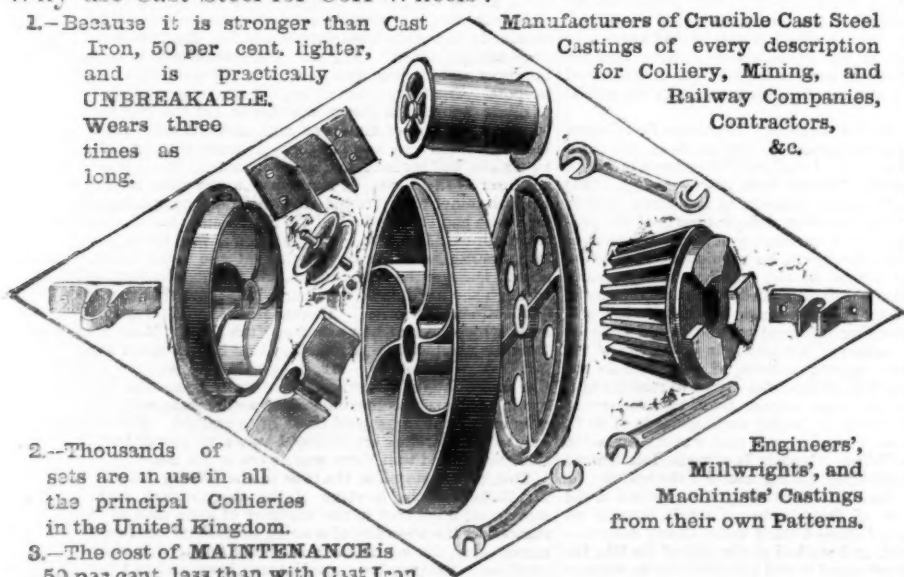
IMPORTANT TO COLLIERY PROPRIETORS AND MINERS.

Why use Cast Steel for Corf Wheels?

1.—Because it is stronger than Cast Iron, 50 per cent. lighter, and is practically **UNBREAKABLE**. Wears three times as long.

2.—Thousands of sets are in use in all the principal Collieries in the United Kingdom.

3.—The cost of **MAINTENANCE** is 50 per cent. less than with Cast Iron.



Manufacturers of Crucible Cast Steel Castings of every description for Colliery, Mining, and Railway Companies, Contractors, &c.

Engineers', Millwrights', and Machinists' Castings from their own Patterns.

### SPECIALTY.

Steel Shells for Crushing Rolls, Grinding Mills, Stamp Heads.

Grates, Crushing and Grinding Plates.

**Steel Spur, Bevel, and Worm Gear of every description.**

Points, Crossings, Switches, Chairs, &c.

Tram and Barrow Wheels, Incline Rollers, Gauge Guides, Catches, Rope Pulleys, Pedestals, Turntables, Pump Barrels, Buffers, &c.

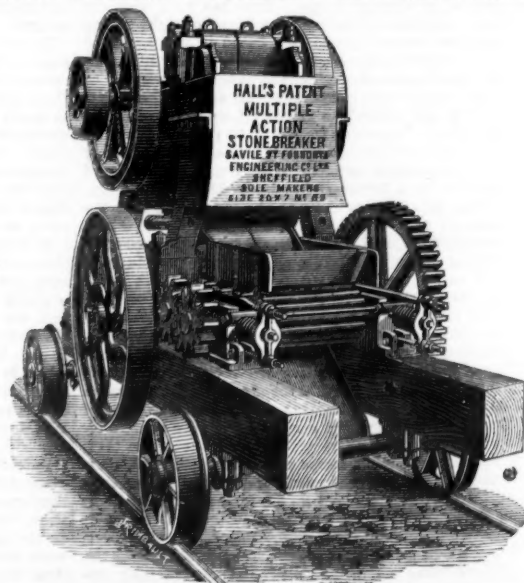
CATALOGUES AND FULL PARTICULARS UPON APPLICATION TO THE WORKS

Agents wanted in Mining, Colliery, and Manufacturing districts.

**CONTRACTORS TO H.M. GOVERNMENT**

SPECIAL MACHINERY FOR CRUSHING AND PULVERISING ORES AND QUARTZ OF EVERY DESCRIPTION, BY BOTH WET AND DRY PROCESSES.

HALL'S PATENT PORTABLE CRUSHING PLANT.



SOLE MAKERS OF HALL'S PATENT MULTIPLE ACTION STONE BREAKERS, ORE CRUSHERS, &c.

IMPROVED CORNISH AND OTHER CRUSHING ROLLS.

Machines for Breaking Cannel and other Coals for Gas Making, Coal for Coking, Black Ash, &c., &c.

HALL'S PATENT ECCENTRIC GRINDING MILLS for reducing mixed ores, chats, and waste, for further separation.

BAKER'S PATENT ROTARY PRESSURE BLOWERS, GAS EXHAUSTERS, PUMPS, &c., &c.



## Original Correspondence.

## LEAD TRADE.

SIR.—Since my last there has been rather a flat market, and little or no business doing, but yet there is only a small lot of rich Spanish lead on the way to the United Kingdom unsold, and but for this fact we should have had a fall of quite 10s. to 11s. a ton. The season for contracting for manufactured lead goods for delivery all over 1881 is now coming on, and some large orders for white lead have been taken at low prices as compared with last year. The news from Spain is that there is not much lead offering, and some of the large smelters are holding all their make till the price is much higher.

STOCKS.

## COLLIERY EXPLOSIONS, AND SAFETY LAMPS

SIR.—Coal mines being now worked at a depth much greater than they were, say 50 years ago, the danger and responsibilities in connection with working coal have become much greater. In alluding to this subject at the inauguration of the tenth session of the College of Physical Science at Newcastle, on Oct. 11, Sir George Elliot, in his address, said in reference to the Royal Commission on Mines that no specific had been discovered for the prevention of accidents in coal mines. He urged the necessity of discipline, having more confidence in managers and workmen acting upon strict discipline, than upon any further legislation in the matter. The establishing of proper rules and regulations, and the strictest attention to them by workmen, unquestionably exercise a most important influence in preventing accidents, more particularly explosions of fire-damp. But there are other matters of equal importance, on which we have been hoping the labours of the Commission would have thrown some light, and rendered material assistance to the practice and science of mining, such as the possession of a secure lamp for fiery mines, and doing away with the use of gunpowder in its present form. These are the most prominent needs of the present day, and the time may not be far distant when by study and experiment improved appliances may be brought out to satisfy these requirements of deep mining. Lamps are now so largely used instead of candles that it is highly important the best form of lamps in respect of giving safety and affording light should be adopted. A great deal of evidence may have been given before the Commission in favour of Davy and Clanny lamps, which amounts, in many cases, to prejudice against any lamp containing in its structure a departure from the old forms. The Davy lamp will explode the exterior air when placed in an explosive current, travelling at the rate of 7 ft. per second. Besides, tobacco can be lighted at the flame of the lamp through the gauze, there is no need of unscrewing the top off the lamp for this purpose. Deputies usually fire shots by heating a small wire put through the gauze and applying this wire to the fuse; this is probably one reason why this lamp retains its popularity amongst officials.

The experiments made by the committee of the North of England Mining Institute showed that the three common forms of English lamps—the Davy, Clanny, and Stephenson—are unsafe in strong explosive currents; the first exploded the exterior air at 7 ft. per second in 15 seconds; the Clanny at 9 ft. per second in 45 seconds; and the Stephenson at 11 ft. per second in 28 seconds, showing that the Davy would fire an explosive current in an airway of 42 ft. area, through which was passing 17,640 cubic feet per minute. After these experiments were made several new lamps were designed by members of the committee and others. None of those seen to have supplanted the old lamps named above, owing to their construction being too complex, or the difficulty of maintaining the light from the admission of air to it being too restricted. The Stephenson lamp is constructed on the principle of restricting the admission of air to what is required for the flame of the wick—any increase of combustion causes the light to die out, as when gas burns within the lamp. The products of combustion require sufficient space for their egress at the top and to be protected from strong currents; from the latter the light is liable to be extinguished should the burnt air descend upon it. The inner glass cylinder within the gauze is covered by a perforated copper cap; the gauze cylinder usually stands about 1 inch above the glass. This lamp, as is well known, is extensively used in the gaseous coal seams of South Yorkshire, having conducted greatly to safety in working and freedom from explosion in that district, though the inferior light it affords compared with one constructed partly of unprotected glass is an objection to it. Lamps have been designed, however, to meet this defect which may come into general use not only in substitution of the Stephenson lamp, but others in common use having the serious defects before referred to. When the light given by a safety-lamp is at least equal to that of a candle it seems the proper course to adopt lamps and use them in all parts of fiery mines, not only on account of outbursts of gas which a particular mine may or may not be subject to, but also on account of casualties, such as falls of stone, which often break down bratticing, and may thus lead to fire-damp accumulating instantaneously. Such incidents show that a lamp affording a good light, and protecting miners from the danger of an accidental discharge or accumulation of fire-damp being ignited, is much to be preferred to the use of candles for lighting mines, and a general rule to this effect, it is believed, should be enforced.

The Belgian Government has shown commendable zeal in issuing regulations concerning the lighting of mines, and appointing a Commission for the purpose of testing lamps. This has been done in order that the safest instrument (having also superior light-giving properties) that could be devised should be placed in the hands of the miners. The Commission referred to published their report in the year 1873. The experiments were generally extended over five or six minutes each, and made with mixtures of air and gas having a velocity of about 19 ft. per second—a velocity found to be dangerous in the Mueseler lamp. Velocities from 9 to 13 ft. were found to be generally safe. It may be observed that this Mueseler lamp having been proved to give the greatest security in fiery mines, the use of it was made compulsory by a Ministerial order in 1864. The Commission after numerous experiments came to the conclusion that the Mueseler lamp, supplied with vegetable oil, is superior to all others submitted to its examination, and that it should be the only one admitted for the lighting of fiery mines, together with the Mueseler-Godin, the large Mueseler, and the Deputy's or testing lamp. A modification of the Mueseler lamp by Joassin was at the same time found to be the most reliable. In 82 experiments at a velocity of 19 ft. per second there was only one case of explosion. The relative security of the Mueseler lamp rests in the small diameter of the aperture at the top of the chimney (the diameter should not be more than 3/4 in.), and in the degree of resistance of the horizontal gauze to the penetration of the flame, and to other slight details in form of the chimney. It must be inferred that comparisons were made only with the Davy and Deputy's test lamps, as they do not refer in their report to the Stephenson and other lamps used to a considerable extent in English mines. The Commission considered that the mineral oils, being variable in their composition, and more or less of an explosive nature, were too dangerous to be authorised for use in fiery mines.

By a Royal decree given June 17, 1876, the orders relating to the lighting of fiery mines being contained in several general and provincial regulations, were united in one decree of 15 articles. These relate to the use of the Mueseler of standard type, and certain modifications of it only for lighting mines; the large Mueseler for lighting hanging-on places at shafts, and the deputy's, or testing lamp, with double gauze, of 30 English wire gauge and 1354 meshes to the square inch. The other articles relate to the locking of lamps, carrying unlocked lamps or instrument by which a lamp can be opened, matches, pipes, &c.; where fire-damp shows itself in a working place, by a continuous lengthening of the flame in the lamp, work must be suspended immediately until the danger has been cleared away.

We think enough has been said to show the importance of such experiments, and how requisite it is to know how far a lamp is reliable in the hands of workmen as a means of avoiding explosions, or as indicating the presence of gas in examinations before the workmen enter into their places. It is essential not only that a lamp should possess sufficient illuminating power, in order that workmen

may be able to separate the stone from the coal in filling the latter into tubs, but also that it should not be liable to be tampered with in any way, such as being a means of firing shots, lighting tobacco, or being too easily unlocked.

S. L.

## THE LATE DESCUBERTO MINES, NOW THE BRAZILIAN GOLD MINES (LIMITED).

SIR.—As you are aware, within the last few months millions of English capital have been expended in the purchase of Indian gold mines; but why should capitalists look to India for gold?—a country so distant that it is almost beyond the possibility of their power to reach it, in order to see for themselves that in which they have invested their money (climate pestiferous and deadly), which is, as to mining of any description, almost entirely unknown, and as to its gold-producing capabilities equally so—when Brazil, situated in one of the most delightful and salubrious climates in the world, can be so much quicker, easier, and cheaper reached, has been beyond the memory of man celebrated for the excessive richness of its gold mines, and for the abundance of gold which from a variety of sources it is known to have produced, and still continues to yield, known from historical facts that the mines of the province of Minas Geraes have produced gold to the value of 90,000,000 sterling. These mines, of which the Descuberto, now the Brazilian Gold Mines (Limited), is one, are found at the foot of a mountain chain, forming together with its spurs almost a regular elipsis of 150 or more miles in circumference. Here are the mines that are now being wrought and which have been wrought by English companies—San Joao del Rey, Don Pedro del Rey, Ouro Prieto, Santa Barbara, Gongo Soco, Cata Branca, besides an infinitude of gold mines and of alluvial gold deposits in possession of native owners. All these places and mines were perfectly known and familiar to me, for I was employed at the world-famed gold mine Gongo Soco from the year of 1829 to the end of that of 1834, having served some months over my five years, the stipulated time of my engagement with the company; 46 years have elapsed since I left the mines. During the time that I was at Gongo Soco it was beyond doubt the richest gold mine in the world. It yielded in about the period of my five years gold to the amount of 1,433,000 sterling. Boxes with locks, the keys kept by the Cornish miners who were breaking out the gold, were placed underground, and kept in the presence of the miner who had to open it when required to put in the gold. Daily in the evening each man who was employed in raising gold brought to the washhouse his mining haul full of almost pure solid gold. Pieces of the size of a brick have I seen fall beneath my feet from the wet muddy running jacotinga of equal solidity and purity. Wonderful have been the profits derived from the Brazilian gold mines. The larger portion of these mines are in the jacotinga formation. St. John del Rey, in the gold pyrites, upon a capital of 250,000, has paid its shareholders over 1,000,000 sterling, and the shares now command a market value of 100 per cent. prem. Don Pedro, in the jacotinga, some years ago, when the auriferous deposits were struck, the 15s. share suddenly rose to 5s., and dividends were paid at the rate of 100 per cent. per annum upon a capital of 52,000. Santa Barbara, in the pyrites formation, a facsimile of that of St. John del Rey, last year paid dividends of 35 per cent., and the shares command over 300 per cent. premium. This mine may be said to be in its infancy. The Descuberto Mines, to which I beg to call particular attention, and which are now called the Brazilian Gold Mines (Limited), are situated in the midst of the richest known gold region in the world, and we may say in the centre of the richest known district. It is distant 40 miles from Don Pedro del Rey, 30 miles from Santa Barbara, 20 miles from St. John del Rey, and but a short distance to the west of the celebrated Gongo Soco. I here use the words of Mr. Richards, who is now the chief manager at Santa Barbara, who was at St. John del Rey, and who came to Gongo Soco whilst I was there. In speaking of the Brazilian gold mines relatively, as to Gongo Soco he said—"Speaking as we do in Brazil there is really no distance between your property and Gongo Soco." But it is to the Descuberto Mines, just now set to work under the name of the Brazilian Gold Mines (Limited) that I would beg to call the particular attention of capitalists and investors in mines, and which constitute the object that I have in writing this paper. The Descuberto Mine, or the New Brazilian Gold Mines, embrace eleven auriferous lodes, said to average from 4 to 7 ft. in width, appertaining to three distinct mines—the Descuberto proper three, the Matta-Matta five, and the Serviço Velho Mine three, but as the workings, which consisted solely of open surface cuttings, and so worked, as stated, only to the depth of 18 fms., have all crushed and sunk together, the fact of the magnitude and state of the lodes can be ascertained only by public report, which without a dissentient voice say that the lodes up to the time of the cessation of operations, through the death of the widow lady owner, were rich in gold. They have also a mountain of auriferous jacotinga of a most promising appearance for gold. Great faith is placed on this, as stated in the reports of the practical men who inspected the property, but which as yet has not been penetrated. When at Gongo, amidst the abundance of riches there, I used frequently to hear of those of the Descuberto, but a stronger and a more convincing proof as to the rich and enduring state of the mines I gather from the documents which I read, left by the several successive generations of the family, owners of the mines, who state that they worked them during a period of 147 years, and that they kept every member of the respective successive families during that time in ease, affluence, and luxury, and which is attested and confirmed by a long and minute official statement by the public notary.

TRANSLATED FROM OFFICIAL DOCUMENTS.—Domingos Roiz Guerra states—Captain José Roiz Guerra carried on operations in the same cargo, and having allowed some gold washers (fuisendones) to work their lands one or them, a certain Manoel Pires, discovered (in 1793) so much gold on the top of the hill, opposite to the sierra, that it attracted gold hunters (garimpeiros) from different parts of the province. These attacked the people in the employ of Captain José Roiz Guerra, who being unable to resist them, he requested troops of the line from Villa Rica, the capital of the province, and so many deaths resulted therefrom that the dead bodies were carried away in carts, as stated in the evidence of several men of that period, and corroborated by the accompanying information of the old vicar of the parish and of the public notary. Remaining in possession of the mine, he continued to extract large quantities of gold, and as the working of the mines became difficult he endeavoured to raze the hill, and for this purpose made an open cutting from the corrego of St. Antonio Mine more than 500 ft. in length and upwards of 60 ft. deep. In carrying out this work another rich spot was discovered in what is now called Serviço Velho. Captain Domingos Roiz Guerra died, and Captain Ignacio succeeded, having married the widow; he continued to extract gold. Then another rich spot was found in the hill Matta-Matta, in the west of Descuberto. Captain Ignacio removed his force to this place, followed many veins—five I believe—all yielding quantities of gold, and worked at the risk of his life, for every now and then the ground caved in and killed his slaves, whence they gave it the name Matta-Matta (Kill-Kill). While working on these rich spots another rich spot was discovered, more to the south, on the same hill; this was called Paciencia. Here they continued to work until the formation became too deep, and it is said that a great deal of gold was extracted from it. They then returned to the works in Matta-Matta. He, Ignacio, died in 1823, leaving a large fortune, acquired from this inexhaustible mine. Everybody in the neighbourhood knows that the mine of which we are treating is rich. No one denies it. It is sufficient to remember that Captain José Roiz Guerra, a Portuguese, who came to this country poor, became rich, and sent for his nephew, Domingos Roiz Guerra, who also enriched himself, and finally Captain Ignacio, also a Portuguese, became rich; and Captain Quintiliano lived there 69 years, reared a numerous family, lived independently, and always had at his disposal money in abundance, having no other resource than that of mining. Many offers were made for the mines, but the owners declined to sell except at fabulous prices. Another proof of the mine is its being worked 147 years consecutively. It was never drained, has no deep mines, nearly all the formations are uncovered, and they may be yet worked for an equally long period, more especially with the addition of the jacotinga in the sierra which borders on a portion of the mine.—Signed, DOMINGOS RIOZ GUERRA.

All the foregoing is corroborated and more added by the next deponent, Padre Jacinto José de Almeida, who says that the daughter of Captain Quintiliano married Captain Quintiliano Martin de Costa, who continued to work the mines, and extracted sufficient gold to place them in an independent and respectable position. The next deponent is Caetano Aloriz Pinto, the public notary of the district. He speaks of such an abundance of gold as that it excited the greed of the gold hunters—the grimpeiros, as before noticed—of the war, and of the number of bodies which were carried to Caethe to be buried. "On leaving school when young, in 1824 or 1825, I went to the said Descuberto, then administrated by Bernardo Vieira Leite, my godfather—the feitor of the slaves was Estanislao Pereira de Fonseca. The workings were then in an open cutting, with two distinct strakes of hides, covered by gratings to protect them. The hides from both these strakes were washed frequently during the day. Besides these there was a single strake, and they produced a great quantity of gold. Captain Quintiliano from the mine Descuberto got a large amount of gold, which not only sufficed for the support of the mine with a large number of slaves and employees of his numerous family, whom he brought up in great style, and also to entertain his friends in great luxury. In the war of 1842 he maintained at his own cost a body of 400 men, to many of whom he lent sums of money, all derived from one source—the mine." After going into further particulars, he says—"This is the information I am enabled to give respecting the mine of Descuberto de Guerra. I consider it a rich mine, and worthy of every recommendation. I am now 64 years of age. I have worked both in gold and in diamond mines, and consequently have some slight and limited experience."—Signed, CAETANO ALORIZ PINTO, Second Notary Public of the District.

Thus it will be seen to all appearances, relying upon apparently infallible data, that a cluster of rich mines, after having been worked consecutively for 147 years, worked without system or order, yet leaving an abundance of profit, were brought to a standstill from want of a skilled and proper method of working. According to every prospect, what may not be expected from these mines when wrought by English miners and under experienced English management? Why, again it may be asked, go to distant India in quest of gold mines, in a pestiferous climate, while gold mines of such high promise as these present can be obtained in Brazil?

JOHN LEAN.

Oct. 15.

## PRACTICAL MINERS VERSUS PRETENDERS.

SIR.—In the Journal of Sept. 25 I noticed that there was a long and well-written article on the Emma Mine, its misfortunes, its original excessive riches, celebrated not only in Utah but throughout the United States, that its fame was known in England, that its very richness contributed most to its collapse, that working and extracting only the riches explorations were neglected, and that this and the manager's want of practical knowledge soon led to the caving in of the mine, and to the suspension of all things, dividends and all. No doubt that all this is true, but had Mr. Brydges Wilyams been right in the report which he made to his co-directors on his return from the mine it would appear that there was no necessity for immediate explorations, for he was said to have stated at the meeting of directors that not a man in the room would live to see the end of the dividends. I am aware that in two months after this report of Mr. Wilyams' dividends ceased, and none were ever after paid, and when Mr. Brydges was asked where was the endless quantity of ore that he reported he said, "As they say in Cornwall, you cannot see further than the pick." Whether Mr. Wilyams meant that one cannot see further than the pick can see, or further than it can dig, I know not, but I do know that the expression was never used in Cornwall. But to return to the ore. Instead of there having been such a quantity in sight or discovered in the mine as reported by Mr. Wilyams the present article to which I have referred says that the existing bonanza exhausted; there was no other chamber of ore to fall back upon; that Mr. George Attwood, who was appointed manager in April, 1873, greatly disappointed expectations; that apparently he did not understand the mine, nor the formation in which it occurred. How should it have been otherwise? What could Mr. Attwood have been expected to know about a mine, lode, or formation, never having been a miner, and this, if those who engaged him had been fitted for the post which they held, they would have known.

Mr. Attwood did not disappoint me, for I told Mr. Brydges Wilyams what would be the result of Mr. Attwood's administration as soon as they engaged him. The bonanza exhausted Mr. Attwood lost his spectacles and the vein together, and there the matter ended. Mr. Attwood, it appears, had come down on a slide, and that had shut him up, a matter not to be wondered at, for what could such a tyro be expected to know of mines or of slides? But such is the general ignorance of mining boards of directors relative to mining that they think anything will do for a manager—a man who was never a miner, who knows nothing about a mine nor of the ten thousand phenomena of the bowels of the earth! Mr. Attwood meets with a slide and he is at his wits end and the end of the mine too! That Mr. Attwood and Mr. Longmaid and other Englishmen sent out as superintendents all proved themselves equally incompetent to work the mine, and it was not till it again went into the hands of the Americans that any important promise of a return to productiveness was obtained; hence the absurdity of sending English managers to manage foreign mines. Not so. The absurdity is in those who select improper and incompetent men, men who were never miners, for the purpose. The thoroughbred English miner, be it in whatever country or clime, knows at a glance whether or not the ground is conducive to the production of metals or not; and not only that but of what kind of metals also, and he works his mine without being frightened by a slide, but is gladdened and encouraged to see it as a feeder and fertiliser of the lode. It is no less a pity than an injustice to an English miner to injure his reputation by comparing him with the men who had the conduct of the Emma and that of some other American mines. Longmaid, like Attwood, was never, properly speaking, a miner, and recently another of the same category has been sent to manage the Last Chance, and the shareholders and the public, through the medium of the Journal, are told that they have sent out "an eminent authority." Having read the first report of Mr. Longmaid which he sent home on the Utah Silver Mine I at once saw from his unmineral-like phraseology that he was not a miner, and told Mr. George Batters so. Mr. Longmaid was sent out as manager of this mine, and on his arrival there wrote home that the quantity of ore in the mine was inexhaustible, and recommended that adequate dressing machinery should be at once erected. This was done, at a cost to the shareholders of 7000, when no sooner had it been done than he advised that there was no ore in the mine.

This, as was stated at the time in the Mining Journal, was said by Mr. Batters at the meeting of the shareholders, and yet English miners are numbered in the category of such men as these, and instanced as the absurdity of sending English miners to manage foreign mines—nay, the miner is a miner be he engaged in whatever country or clime. Nature's laws are Nature's laws, and as I before said, the miner knows at a glance whether the ground is to be productive of metal or not, and of what kind, and is not thrown into confusion by a slide, nor by any other phenomena. For example, I myself when about to return from Chili, in 1840, was taken by the late Mr. Chas. Lambert to examine the copper mine which he had just then purchased—the mine which gave him his princely fortune. He had but just begun to work. I found the mine very poor indeed, and told Mr. Lambert that he had a very poor mine. "Yes," he replied, "the mine is not rich." "No, Sir, but very poor, but notwithstanding its present poverty it is my opinion almost to a certainty that here you have a vast fortune." A fortune almost unparalleled it gave him, and is still working and continues to add. On another occasion a Chilean gentleman said to me "I wish that you would go into my mine—San Francisco. I do not know what they are about. A long time ago they lost the lode there, and I find that they have driven 100 fms. of cross-cut, but no lode has been found. Will you go and have a look at them?" I went, as requested, and found that they had actually driven a cross-cut of 100 fms. through a flinty rock. Yes, they had lost the lode in a winze sunk (say) 20 ft. below the level; had come down on a bed of clay, and all sign of lode had disappeared—a phenomenon as described similar to that of Mr. Attwood's at the Emma—and from this place, from the bottom of



the winze, and from the clay, which clay I saw in a moment was nothing more or less than a slide, they had begun the 100 fm. cross-cut. I put the men to drive a few feet into the hanging-wall of the lode just to have room to work beyond the bottom of the winze, and then requested them to turn round towards it and sink on a certain angle—a flat diagonal—so as to get a few feet below the bottom of the winze and of the slide, and when they had sunk barely 10 ft. and had scarcely reached beneath the bottom of the winze or slide, they struck into the lode and into the mass of silver—the whole of the operation cost under 10%. This renewed the mine, and it yielded such an abundance of silver as it had never before yielded.

In 1846 I was requested to go down to Bolivia to look at some copper mines belonging to some English merchants at Valparaiso. I went, and found a Chilean gentleman there as manager. He also had got down on a bed of clay, and in that direction had ceased to work. I wrote to Valparaiso and told the owners of the mines that the mine would be good if managed by a miner, but that with the then present management they would be good for nothing. Some time after this they let the mines on tribute to some young Cornish men who from cradlehood had been trained to mining in Cornwall. They at once struck into an abundance of rich copper ore, so that in a short time on tribute they so enriched themselves as to be enabled to effect the purchase of the mines as well as a fleet of magnificent ships in which to ship their ore to England. These men constitute the firm of Lean, Jose, and Co. They have made an immense fortune. Pray do not number Cornish miners with such men as you send from London to America and elsewhere to manage mines—men who know nothing of mining, who were never miners, and are only the means of bringing a slur and injustice on those who are.

King-square, Goswell-road, Oct. 19.

JOHN LEAN.

#### PRACTICAL AND THEORETICAL MINING.

SIR,—For several weeks past I have noticed that a great deal has been said by various correspondents on the subject of practical and theoretical mining. First comes "Practical Miner," with his practice versus theory, when he is at once opposed by the apparently excited ire of Mr. Halse, who is evidently not too well versed in the matter on which he writes. "Practical Miner" rejoins, and Mr. Halse's wrath waxeth hotter and stronger; his lack of knowledge of his subject apparently increaseth with the increase of his ire; when down comes "Gold, No Gilt" like a sledge-hammer, on the pretenders, and says that "a washerwoman might as well be put to manage a mine as a school of mines pupil." As a matter of course there can be no doubt that this is endorsed by every thorough-bred miner in Christendom, and by none with more truly, free and hearty goodwill than by your obedient servant—Oct. 20.

JOHN LEAN.

#### RUSSIAN COAL FIELDS—No. VI.

SIR,—In my former letters I have given your readers a description of visits I have paid to the Donetz coal basin at different times, and I would state that that is only one of several known basins in European Russia—notably the Tula and Kaluga basins, to the south-west of Moscow, and the Rjask basin, to the south-east of Moscow, and the Perm basin, about midway along the range of the Ural district, also in the northern district of the Caucasus. This latter is, however, unopened, in all of which districts (with this latter exception) coal is being actually explored. I have described the various circumstances under which salt is found in the Donetz district—Lake Elton and in the Island of Tchelen. Salt has also been discovered in other parts, but the deposits have not been worked to any extent.

In one of my letters I noticed the nature and value of the ozokerite deposits, coupled with the petroleum regions of Tchelen and Baku. Petroleum is being very considerably exploited in various parts of the Caucasian isthmus by Tartars, Persians, Armenians, Russians, Americans, Swedes, and Frenchmen; but there is only one enterprising Englishman in the whole country. He has taken a property in the extreme north-west of the Caucasian range, and has had appliances sent out of the most approved description for boring, pumping, and distilling petroleum. The yield at Boulakani, in the Baku district, is very large. Many of the wells yield as much as 25,000 poods in the 24 hours; and as soon as the railway already commenced between Baku and Tiflis is completed it is anticipated that the oil will be transported to Poti, and thence exported to various parts of Europe to a very large extent, and, once the export *via* Poti is an established fact by rail, there is no doubt the transport will be further augmented by means of a line of pipes, that will without doubt be laid between Baku and Poti, with pumping stations at stated intervals along the route. As it is, the heavy lubricating oil can be brought at a carriage *via* the Caspian Sea up the Volga to Tsaritzin, thence down the Don to Rostoff, on the Sea of Azof, to London, of 5/ per ton. An American capitalist two or three years ago offered to lay the above line of pipes on the rather absurd condition that he should have the entire monopoly of all the petroleum land on the south side of the Caucasus; but his petition for such a concession was strenuously and successfully opposed by the representatives of the various native proprietors, as being very prejudicial to the interests of the commonwealth. Finding himself foiled at the south he then went to the extreme north-west of the range, where he has established some well-boring works. I would strongly advise capitalists to embark prospectively, oil being so plentiful and of a very fine quality, and when tapped is comparatively inexpensive to work. Once the communication is perfected so as to open up facilities for easy shipments of large quantities with regularity the trade will bid fair to rival American oil on the European markets. The mineral wealth of the Caucasus is enormous—silver-lead, calamine, copper, antimony, and sulphur—all these minerals have been greatly neglected. To the best of my belief there is not a single smelting-works in the Empire. All the lead ore raised on the northern coast of the Black Sea is bought up by the large smelting firm of Marseilles, and shipped thence, and Russia buys all her requirements of lead. There are many rich mines that could be readily secured, and if smelting-works were erected in convenient localities a large and profitable business may be carried out most successfully. With capital, here is presented a large field for commercial enterprise. Copper is smelted in several parts of the country to a considerable extent—in the Viatka, Ekaterinburg, Orenburg, Altai, and Tiflis districts. The former is worked by Russians, and paying well; the second belonging to Prince Demidoff, whose mines are world-wide known as containing the finest and purest malachite; the third being worked in one place by an English company—if it is not paying it is no fault of the property, and can be made to pay both as to mining and the smelting; another portion by a foreign company on the Little Inzer river, and paying well; the fourth district belonging to the late Empress, the brand of which works is well known on the English market; the fifth is worked by foreigners, and smelted; the works are in the immediate vicinity of the City of Tiflis; it is a recent undertaking, and has not yet grown to large dimensions.

On both sides of the Caucasus there are forests of Box, Rose, and other hard woods of the finest quality; as also on the south side and Tiflis and Linkoran large forests of the most splendid walnut, far superior in texture, marking, and colour to either the Italian or Spanish for cabinet and piano work. Very little, if any, finds its way to England; but a not inconsiderable quantity is purchased at the forests by certain Greeks, who go there periodically for the supply to Marseilles and Paris markets. There is here in this branch of commerce a fine opening for some solid enterprising English people. The precious metals are found mostly on both sides of the Urals, north and south, and also further in the interior of Siberia. In Russia, where gold is struck either in reefs or in alluvial beds of rivers, the Government grant ready permission to serious people to prospect and exploit, the only restriction being that the gold must be handed over to the Governor of the Province in which the exploitation is being carried on, who gives the proprietor a due and legal receipt for the same, which must be legalised by one of the principal notaries of St. Petersburg for exchange and foreign affairs, who enters them into his notarial register, and gives his certificate attached in due form and order, which then becomes a negotiable commodity. After having been signed by the Finance Minister's Department it can be sold on the Bourse or exchanged at the Ministry for a warrant to the Imperial State Bank to pay in gold coin, six months after date,

the full market value of the gold named therein at the date of the warrant, less the stipulated and regulation cost charge of coining or its equivalent in value in paper roubles, at the option of the holder. This system, which is a good one, reduces the risks of the owner to a minimum, and, as far as the State goes, prevents the wholesale export of bullion.—London, Oct. 13.

VERITAS.

#### EMMA SILVER MINING COMPANY.

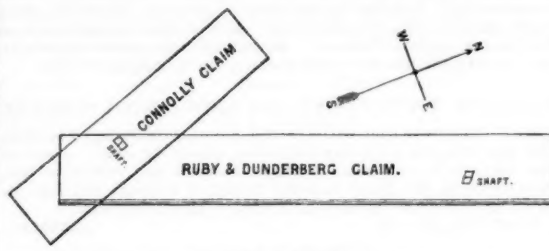
SIR,—What are the directors doing with regard to the rumoured settlement of the American actions? I understand they have enough in hand from moneys received out of the English directors, &c., to return the shareholders a good dividend. Why do they not communicate with us?

A LARGE SHAREHOLDER.

#### CONNOLLY COMPANY—RUBY AND DUNDERBERG.

SIR,—Seeing in last week's Journal some remarks emanating from the directors of the Connolly Company, at whose suit the Ruby and Dunderberg Company have been prevented from obtaining a patent for one of their mines, and seeing also that it is stated that any further reference to the subject must appear in your Correspondence columns, I am prompted to give you my own views upon the matter, as I am qualified to do so by my intimate acquaintance with the district. I inspected the Connolly Mine as well as the properties of the Ruby and Dunderberg Company before leaving Eureka in June last, and I am in a position to unhesitatingly corroborate the statements of the Ruby and Dunderberg Company's officials which appeared in connection with the remarks of the Connolly Company as above named. The ultimate result of the lawsuit, even if successful, will not interfere with the bodies of ore in the Dunderberg Mine, and will not lessen in any way the capacity for output, the ground in dispute being at the extreme south end and far away from the present workings. The decision of the Eureka Court appears to be adverse, it is true, but I hear an appeal has been made to the Supreme Court, at Carson, and all mining men at Eureka were firmly of opinion that the decision at present reported would be undoubtedly reversed in favour of the Ruby and Dunderberg Company, whose position is a strong one.

The accompanying rough sketch shows exactly the position of the mines, and that of the south end crossing the Connolly claim is the piece in dispute. I may say that this plot of ground, to the best of my recollection, is not ore bearing, but the shaft of the Connolly Company's present means of getting at their mine are in jeopardy; in other words, the success of the Ruby and Dunderberg Company would deprive the Connolly Company of their only shaft.



The importance of the piece of ground to the Ruby Company is that they require it to complete the patent for which they applied. I give these remarks from no personal interest whatever in the matter, but simply to correct any wrong impression which might have been formed upon the subject. I may also state that the ore bodies in the Connolly Mine are west of the shaft, and inclining north-west.

Redbrook Terrace, Camberne, Oct. 19.

H. PRIDEAUX.

#### CONNOLLY, AND RUBY AND DUNDERBERG.

SIR,—I am desired by the directors of the Connolly Company to hand you the annexed extract from a letter from their superintendent at the mine, dated Sept. 26, which was prior to the suit coming on for hearing therein referred to, and which has since been decided in this company's favour.—"Mr. Hillhouse says there is not the slightest doubt in the world of our gaining in the higher Courts if we fail in the district Courts, taking into consideration the great importance of following up this blackmailing outfit; and I may safely say beating them in the long run will not only give us the Connolly as claimed but take in the Jinksville on the east dip. Providing we gain in the district Court now under consideration we propose to commence a suit to recover on the ore taken out of Jinksville. This will give the Ruby people a terrible shaking up. Reilly says he will not leave them with a foot of ground that the Connolly can claim either on the strike or dip. You may expect the Ruby Company to have a general shaking up if we gain what our suit calls for."

Referring also to the claim now made by the Ruby and Dunderberg Company to a portion of the Connolly Mine, I am also desired by the directors to hand you, annexed, a copy of a receipt given having reference to this matter.

London, Oct. 21.

Pinshury, London, July 26, 1877.

Received of J. G. Fanshawe, Esq., the sum of 250/ on account of purchase of the interest held by the Ruby Consolidated Mining Company in the Connolly Mine, as per memorandum dated July 25, and given to Mr. Fanshawe by me.

(Signed)

J. M. HYDE, Hon. Secretary.

#### RUBY AND DUNDERBERG, AND CONNOLLY.

SIR,—I note in last week's Journal a statement from a letter written to you by the directors of the Connolly Mine. Perhaps no one better than myself can answer the queries therein put forth, I having been special commissioner in America for the Ruby Company for five years, and all matters in connection with the said company passing under my supervision. Therefore, from me the explanation should come. In the first place, one-fourth share of the Connolly Mine belongs to the Ruby Company. After having the mine overlooked, I advised the directors to sell same to the British Mining Company (now called the Connolly) for the sum of 200,000/ of which 250/ deposit was paid. No more has been paid by the purchasers. Wishful to have all matters settled before giving up my trust, and leaving Eureka in August, 1879, I had an interview with Mr. Potter, the agent for the company, and in whose name three-quarters of the said property was vested, it was agreed, with the consent of the lawyers on both sides, that the Ruby Company's title to the one-fourth portion was complete and was accepted as such; that so far as the extreme portion of the south end of the Dunderberg extended 200 ft. of the Connolly had located on our mine. Both sides agreed, as did also an expert, that the ground was of no value to the Ruby Company, but valuable to the Connolly for surface ground. It was agreed that the said land or surface should be for the Connolly use, and if that mine or the Ruby Company applied for a patent no opposition should be offered by either party. The non-payment of balance of purchase-money due to the Ruby Company is no doubt the sole cause of the trouble between the two companies. I should inform you that in 1871 the whole of the Ruby Mines were in my possession and under my control.

I will now answer *seriatim* their queries with regard to the application for our patent the Ruby Company could not apply for less than their claim entered in the registrar's book at Eureka, which is dated May, 1869. Neither would the Articles of Association of Ruby and Dunderberg Company permit the direction to do so. Had it been otherwise I certainly would have settled that point before leaving, as I again assert, the portion in dispute is a piece of barren waste land. With respect to the refusal to allow the Connolly representatives to inspect the underground workings of the Ruby and Dunderberg Mine, that is a mere sham, as on a simple application to the Court the Judge would immediately grant an order. With regard to the question of application for patent, it was made seven years ago, and by error not in accordance with the registration of the locality of the mine, the issuance of that patent was stopped by permission of the Government at Washington in order to correct it. Now, Sir, as it is a matter of fact that the Dunderberg lodes run differently to the

lode which the Connolly claim, and that both are different classes of ore, and considering that the Dunderberg claim alone contains 320,000 feet, the piece of waste land in question being at our feet, and really of no value to the Ruby Company, I have no doubt that the directors of the Ruby, with the shareholders' consent, will quickly settle the dispute with the Connolly Company in payment of the balance of the purchase-money.

Oct. 21.

R. S. BERNARD.

#### ANGLO-AMERICAN MINING.

SIR,—I was more than a little amused while reading the letter from "Bourbonite," of Brockville, Canada, published in the Journal of Sept. 18. For the further information of your readers I will give my experience. In pursuance of my business as importer of English manufactures I arrived in London in May last, while in England made an effort to dispose of working capital fully-paid shares of a limited liability company of which I am the President—the Silver Mining Company of Colorado—my idea being to employ English capital, honestly managed with Chicago business energy, in developing and working mines of silver and gold ore situated in the richest mineral country in the world—the newly discovered Rio Dolores district in South-Western Colorado. A personal friend of mine, a man well known and of high standing in the City, went with me to an old established influential mining firm, who have a *clientele* at their back; my friend introduced me to one of the partners, briefly saying he knew me, and that my statements might be relied on; the gentleman heard what I had to say and looked what I thought I could not do anything in the way of selling shares in an American managed company, that English people wanted an English company managed in London. After that I called at various times on prominent mining brokers in the City; they received me with politeness and attention, but I did not sell any shares there.

I am pleased to say, however, that I did place some shares among my friends and connections, and we are now actively engaged in mining a valuable property belonging to the company. It seems in order to reach the investing public in England it is necessary to start out with excessive capitalisation, large promotion fees, large management, a showy board of directors, expensive mining and costly solicitors, a high salaried secretary, and heavy preliminary expenditure, all of which might be far better dispensed with, and saved to the stockholders, and the undertaking spared from such a burden. A property thus loaded down, and most likely with excessive mismanagement in Colorado, would have but a poor chance of paying dividends; whereas I anticipate that a company working on its own can be made to yield the investors profits of 100 per cent. annum.

I have seen the prospectuses of several of the Indian gold mining companies, and knowing something about gold quartz mining in America, where the most perfect machines, processes, and appliances for extracting gold are employed, I arrived at the conclusion there was a better chance for investors to realise profits of 100 per cent. per annum in the Rio Silver Mining Company than there is to realise 25 per cent. per annum profits in any Indian gold mining company.

I notice in the Journal of Sept. 18 that "A Shareholder in South-East Wynaad Estates and Gold Mining Company" lays stress on the fact that the Indian companies have rights over hundreds of acres. I would suggest for his consideration that past experience teaches that the larger the number of acres controlled the greater the probability that the resident manager will squander large sums of money in futile prospecting and useless exploration for rich mineral strikes.—Chicago.

J. J. WATSON.

#### MINING IN BRAZIL.

SIR,—I am glad to report a considerable improvement in the condition of mining matters; I predict that it will be further stimulated by the visit of the Emperor, as he takes a great interest in the School of Mines which is established here, and by a new law about to be promulgated, making it necessary for any claimants to mining ground, or water rights to work the mines, or use the water for the purpose stated in claiming it. It will also cover the long-discussed right of one partner in a mining property to work and derive profit to the exclusion of other partners who neither work nor pay a proportion of expenses; and it is especially aimed at a practice recently introduced by the managers of a company who, for reasons of their own, "grabbed" (as it is called in California) a stream of water, to prevent, as they openly state, other parties from negotiating for the purchase of mining ground near by, by going on with their plans. And thereby hangs a tale, which runs as follows:—The negotiators for the mines, aware of intended competition from the company or their agents, made a small creek appear conspicuously on their map in connection with the "tended" water-course, when immediately the "water-grabbers" leased certain land near by, and on some pretext claimed the water. I have heard the story for twenty miles around the place; the natives enjoy the joke immensely, as joke it is—for the water was not claimed, nor was it intended to be; other water near at hand and in abundant supply, having been arranged for. Still, it affords an opportunity for pointing out to the authorities the expediency of a law preventing any practice which should retard mining enterprises. The representation has had its effect; the serious view the subject was taken, and soon the company, or whoever claimed the said innocent water, must present plans, declare intentions, make surveys, &c., or forfeit all claim to it. Having absolutely use for it, the matter may drop here; but the parties have gained an unenviable notoriety by their action.

In my last letter I mentioned the experiment now being tried at the Rio das Valhas, near St. Antonio do Rio Acima. On the 1st inst. I arrived at the place with my travelling companion, an engineer from the French School of Mines. I was not more disappointed at the progress of the work than was the superintendent who despondingly told us that there was *mucho aqua*. The dam appears to be imperfect, and the tunnel is too small. Work is being carried on exactly in the way the Brazilians managed 50 years ago. The company—Brazileiro—instead of sending toward the seaboard, or the railways for men and tools engaged men of Diamantina, up in the interior, who use the original hoe and wooden pan of the forefathers. Singing and shouting they work away, carrying a handful of sand on their heads—a very small contribution toward the completion of the dam. Two heavy draw pumps lately worked by an undershot wheel gain no headway on the water, and the November water will rush over the entire structure, as the tunnel has not capacity sufficient to pass water of a rainy season. The work was commenced nearly three years ago, and it has cost 70000/. I think a company of Californians accustomed to river work could accomplish it all, even to washing the gravel, in eight months time. I believe the bottom of this river in many places is very rich in gold—in fact, I have seen experiments with small coffer dams, resulting in large finds. At present little is known of the mode of working for gold in rivers. I shall keep my eye upon the undertaking, and report the results. If, as is supposed, a good portion of the beds of large rivers remain virgin ground there is a great work to be done, especially in the Rio das Valhas.

There is no change in the St. John del Rey. The want of water is severely felt; it is unusually dry. At Raposos some prospecting work is being done, and the old shafts will soon be ready for reworking. In the Cuiaba (the property of the St. John del Rey Company) work is apparently progressing satisfactorily near Caetho, a new English company are making preparations for the exploitation of their ground, and about Mossa Grande, Congo, and St. John del Morro Grande, various smaller undertakings are moving. The steam machinery of the Don Pedro North del Rey is on the ground, the big water-wheel works well, and I think you may look for good results soon. Certainly at present good management and economy are combined in the administration here. At Passagem the work of reparation is going on preparatory to a very thorough exploitation of the old mines, and with a drill of new ground; a general whitening up of the houses and walls gives the place a cheerful aspect. For all interest centres in the expected visit of the Emperor. Ever



able man is engaged either on the roads, buildings, or streets, painting, and decorating. The Government demand that every man's house shall be put in order, on the outside at least, and generally will be inflicted on any neglected one. A godsend to Ouro Preto and Mariana this Imperial visit is.

MINAS.

Ouro Preto, Sept. 18.

## THE NOUVEAU MONDE MINING COMPANY.

SIR.—A month or more ago some letters appeared in the Journal, from Yorkshire and elsewhere, which led me to suppose that the directors might have thought it worth while by this time to say whether their efforts for raising capital set out before us at the meeting had or had not been successful. It is to be presumed that the Yorkshire gentleman spoke of that which he knew, and if an anonymous correspondent could say so much then, surely the directors could say more now, unless there is some hitch to dash our hopes. It is little use writing to the offices for information; but word through the Journal may have the effect of drawing a little more to the shareholders from the direction, and give an assurance of comfort in the future to at least one of them (who encloses his letter), but begs to subscribe himself as

ANXIOUS THO' PATIENT.

Widhamstead, Oct. 20.

## GOLD QUARTZ, AND ITS TREATMENT.

SIR.—Having seen the announcement of a treatise on gold quartz treatment, I was surprised to find in Mr. F. B. Stech's letter, which appeared in last week's Journal, how little that is new to the main facts therein stated are well known to such as mine managers as have made themselves properly acquainted with their duties. I must except the silver electro-plating of the plates, but am afraid this will be found not to pay by increased yield for extra cost. Mr. Stech does not allude to one source after the stamped ore has got beyond the grates. I shall not say it, but a practical man will know that it renders the subsequent treatment on the buddle much less satisfactory than it might be. Of course I am speaking of ores containing gold with sulphides of various kinds. The advice that the buddled stuff should be sacked and sent to Swansea might be useful in some cases, but it is not a method that would get much out of that. That Mr. Stech should advocate the suppression of stamps and substitution of stone breakers is a surprise, and I do not think he will find many to agree with him on that point. Finally, I would say, that just as there are several sorts of gold ores, so there are several sorts of reduction processes applicable to one class or the other, and if a wrong process is applied to a particular kind of ore a good duty cannot be expected; and in many places the best possible process would not pay for carrying out.—London, Oct. 21.

HENRY J. MORITZ.

## SIMPLE PROBLEM.

SIR.—The following question arose on a foreign mine, and as the comparatively simple, the officers of the company had some difficulty in finding a direct solution, perhaps you may think it worth publishing, as the problem is one that must often present itself to those concerned in dressing ores. A pile of (say) 100 tons of ore worth 10 per cent. has to be dressed up to 25 per cent. How much of the 25 per cent. ore will there be, supposing the waste to be 3 per cent.?

X.

## MINING IN ALGERIA—No. IV.

NOTES OF A JOURNEY FROM DJIDJELLI TO BOGIE, CROSSING OVER THE DJIBEL HADID (OR IRON MOUNTAINS).

SIR.—In my last I left off at 4 P.M. at the Sheikh Masand Benisa's, near the old Roman remains of the town of Siana, and near the small River Kac-kar.

Friday, May 3, 5 A.M.: Down to the river for a dip Capt. Joe Mayself go, and on returning fresh, clean, and ready for anything, notice a large crowd of Arabs all looking on in wonder at the two Englishmen ever seen by them. Our Arab Sheikh said to me, "Mr. —, if you did not eat pig you would be more like my people than any nation."—7 A.M.: After coffee, toast and splendid dinner, we jump on our horses, and off we go over the same ground yesterday to the Sheikh's house, and then to his turbine mill on the river Kac-kar, where we find a kid has been killed and breakfast served for us. All sit round a fire of logs in the open space between the tents, our great friend the Kaid being with us. While at the Kaid's my interpreter explains to me the dress of the Kaid, which is as follows:—

## KAID'S HEAD COVERINGS—(Country).

Kheibeb—white first covering.  
Baik—covering part of the body and head.  
Brama—woollen cordage round the head (x) crossed.  
(In town.)

Turban—turban.  
Chechia hamra—cap.  
Dermous—cloak.  
Kamidja—shirt.  
Gandoura—over-shirt, fine muslin.  
Schatte—shoes, red leather.

The Sheikh do not wear the brema. The tribe Kabili make the difference in their dress by wearing on the head a tight chechia, and leather apron called bentza.

Breakfast over, off we start and walk to see the copper lode far up the River Oued Gypsa, in the next valley, which runs to the seaport of Masuria. We are now about 1000 ft. above sea level.

I notice very fine cattle, and large goats. Here is a Marabout, and several Goulbis, which all look falling to pieces. They are now shearing the sheep, a poor class of merino breed. On our march to the Goulbis all the women run away—the custom—and the men follow.

After some half-hour's walk we travel down a steep hill to the river, and at the foot of a very steep hill we see the copper lode. There is no mistake about it; here is a big thing, and measured it with our tape, showing the face of the lode to be 100 ft. wide. The water is running out from the lode into the river, which colours the water, and leaves a deposit for a great distance in the bed of the stream. Surely this great lode might be worth paying, although the carriage to the sea has frightened, I am afraid, everyone who has seen it so far. After great difficulty I got Joe to leave what he says would delight any Cornishman's eye, and we proceed down the hillpath to Masuria and the seaport.

The Sheikh at Masuria, Said Benbilcassim, tells me that the cost of a hectare of land here at the port would be about 200 fr. per year.

3 P.M.: We now rest for refreshment, joined by our fat friend the Frenchman, and send for our mules, &c., the Sheikh provides a clean cloth, and table covered with dates, fruit, and cold wine, and bread made of parboiled wheat and baked in round flat cakes.

I saw some splendid men with Roman noses, tall and quiet looking. There are orange, granade, and other fruit trees here. I was looking over my note-book Capt. Joe called out at the top of his voice, "I say, Mr. —, I'm blessed if that Frenchman is not eating proper raw black snails with his bread. Look at 'un, he's eating 'em!"

It was lucky for Capt. Joe the little man did not understand English, or we should have had a row.

I forgot to mention that when at Sheikh Lucuff's we saw about fifty men run into the wood, all with short tails. They crossed the river Oued Sreah, also that between this and Taza.

Mr. Trabet, a Frenchman, is very successfully working the iron ore at Djidjelli to Marseilles, but he positively refused to let us see his mine. All the Arab houses, or Goulbis, are covered with Dias.

4.30 P.M.: We now saddle up and start for Sheikh Ali Sleeh, and on the road pass an old Arab graveyard. We see numbers of human bones about on the ground, which is enclosed by a snail's shell.

All the Arabs bow as they pass by. On our left, up the hill, is an old Roman fort, with a fort house, said to have been built by the French years ago. Having arrived, tired to death, we camped at the mouth of the River Oued Agrionn, which runs to the sea about a quarter of a mile below us. We go into the tent (Goulbi or Dergena) and change, wash, and smoke until our dinner is ready. It now gets very dark, and the lights and figures of the men are flitting about from tent to tent. The row of the dogs

barking, &c., has a most extraordinary effect on one. Capt. Joe says it reminds him a great deal of the book "Puck," and he intends to buy it for his wife to read if ever he does get home again alive.

R. G. S.

## GOLD MINING IN THE DUTCH WEST INDIES.

SIR.—A very few remarks will suffice to postpone further correspondence on this subject till the period when the portly form of Mr. Chumaceiro may be seen gracefully essaying to redeem his pledge of climbing the "pole so well greased," which his vivid imagination has portrayed. He forgets, however, that even if he succeeded in that congenially slippery enterprise he would not secure the "leg of mutton" for his clients. The grants they claim are only for "purposes of agriculture" (on a barren rock), and if they established that claim (a thing proved mathematically impossible by a Government Commission) they would be as far off from getting the Phosphate Mines as ever. They could get no mineral rights without another grant from the Government, which Government is, however, under contract to make no grants of any kind on the grounds in question during the term of the Phosphate concession. How, then, is Mr. Chumaceiro to get the "leg of mutton"? The Alliance Phosphate Company (Limited) is, we are told, Mr. Chumaceiro's client. A friend not long ago informed me that this company consisted of seven gentlemen, who had each taken one share (10%) in it. It tendered for the Aruba Phosphate concession and did not get it, and I suppose wants an "alliance to give it a *raison d'être*."

As regards the Aruba Phosphate royalty, the concession provides an equitable method for revising it if it should prove too high. A certain trick played by some persons not altogether unknown to Mr. Chumaceiro practically compelled the Government to fix it at the present amount. As regards the question as to certain clauses in the Aruba Phosphate concession, and which Mr. Chumaceiro again addresses to me, I refer him to my former answer. If I answered them all in the affirmative (which I certainly should not) it would not help his case a bit. As regards the Aruba Gold Companies it is possible (though not I think probable) that Mr. Chumaceiro's misrepresentations may be due to the insufficient acquaintance with the English language to which he alludes. The Aruba Island Gold Mining Company (Limited) is simply engaged in converting its bonds into shares, and all the money subscribed to the Aruba Agency Company (Limited) is being and will be spent in mining development.

## Oct. 19. A LATE RESIDENT IN THE COLONY.

P.S.—Referring to my statement that about 1000 assays of 4000 tons of Aruba gold quartz crushed since the company resumed work gave an average assay of 1½ oz. per ton, Mr. Chumaceiro observes: "What enchantment! I do not believe that the average quality of Aruba quartz contains 1½ oz. of gold per ton." It is of small importance what Mr. Chumaceiro may "believe." Anyone desiring correct information can, I doubt not, see the certified assays at the company's office.

## THE WEST MOSTYN COAL AND IRON MINING COMPANY.

SIR.—Can any of your readers tell me what is going to be done with this company? Surely something should be done. I believe that there is a very valuable property, and I had, and have still, great faith in Mr. Jacob Higson's report, or I should not have induced my friends to invest over 20,000l. in the undertaking.

Forest Hill, Oct. 17.

ANXIOUS.

## COMPARISONS.

SIR.—At a period like the present, when extreme difficulty in finding remunerative and safe employment for money is experienced, and when as a consequence increasing attention is being given to mines, it is important that the public should be rightly guided. Money, although not worth much in the open market at this moment, is nevertheless a commodity which is of the highest importance to some of its owners. At any rate to lose it is for them a matter too serious to contemplate, and if their attention is being directed to mines a word of caution, and, indeed, many words of caution, must not be withheld. These ideas occur to me after carefully reading and considering certain comparisons which have been made in your valuable Journal. A mine may be returning 50 tons of tin per quarter, or any quantity, yet may be a very undesirable investment and a hopeless speculation. The tin may be simply the leavings of more fortunate shareholders, and the tin ground may be for all profitable purposes nearly exhausted.

Another mine known to have rich lodes passing through it, in a stratification no one can call in question, worked by a company able and willing to carry operations to their legitimate issue, and yet not raising for the moment even 10 tons of tin per quarter (or for the sake of argument none), may be and is a better speculation than the one producing mineral under conditions just alluded to. It is but fair to the public that these considerations, and especially just now, should be fairly placed before them. I well remember the Ludcott mania, and other manias for shares in large dividend mines. I remember the short time which such dividends were paid, and a total collapse and stoppage of the properties. To prove that a mine is in a rich district is not to prove that it is even likely to be a success, apart from certain conditions. Those who have a practical knowledge of mining are aware that lodes sometimes change in character and position, and altogether set aside the slightest prospect of profitable results, notwithstanding a rich neighbour. Point me to a district which has never produced a failure and I will admit at once that the investor has first-rate chances in such district, but not otherwise, unless men of first-class standing and men who are thoroughly disinterested can give conclusive opinions respecting the points I have alluded to.

JOHN B. REYNOLDS.

Walbrook, London, Oct. 21.

## MINING IN SHROPSHIRE—OLD SNAILBEACH.

SIR.—I am informed that a very important discovery, in the shape of a rich course of lead ore, has just been cut into the bottom (230 ft. level) of old Snailbeach Mine, Shropshire. The sinking of the shaft had been in abeyance for two or three years, and recently the water was again pumped out and operations resumed, leading almost immediately to a rich discovery. Is not this a good omen for deep mining in the district?—Oct. 21.

OBSERVER.

## EAST WHEAL ROSE.

SIR.—I am exceedingly glad to see in last week's Journal that Mr. Symons has taken the trouble to sift out the true state of things concerning this great and good mine, for in his former letter his remarks certainly had a tendency to put a damper on the re-working of it. I am indeed glad to see that some gentlemen are about to put the mine to work, and I am certain they will have a rich and lasting mine. There is no fear about the productiveness of the bottom of the mine, for when I inspected the mine about nine months before the final stoppage there were good courses of ore in the bottom level—the 150. I also observed the ground was more settled, the lodes were firmer, and the lead more solid, and not half the timber required as was the case in the shallow levels. My impression is the next level—the 160—will be found much richer than any of the levels above. My reason for saying this is because there is such a change in the compactness of the ground and lodes to what the upper levels were, and also the strength of the lead being more solid; in fact, everything shows that as depth is attained the mine will become richer than ever it was upwards; and if this should turn out to be the case there will not be such large quantities of stuff to draw to surface, neither will it require one-third of the timber, which was a very serious expense in the last working. As for the unexplored ground to the south, my impression is, and always was, that there is a good mine in this ground of itself. Roberts' shaft should be sunk, and cross-cuts put out. I may here say, in passing, no cross-cuts of any account were ever put out in this great mine; the fact is the mine has never been half explored. While there was such an abundance of lead it was "pull away." I do not think there was any mine in England ever worked so badly as East Wheal Rose. If the mine had fair play I have not the least doubt but it would have been working to this day. The time I am speaking of—when it was nothing but pull away lead—we were sampling 300 tons of lead every fort-

night, or 600 tons per month. This, you will observe, was really sampled and sold, independent of the lead that was thrown over the burrows, and of which no doubt the lord's agents can give us an account of the many thousands of pounds worth of lead that has been sold since the mine ceased working. Such a waste of lead was never seen in any mine. I shall, by your permission, say more on this point at some future time.

JOHN PHILLIPS,

Oola Hills Mines, Limerick, Oct. 13. Manager of the Oola Mines.

## ROCHE ROCKS.

SIR.—Some time ago I had the pleasure of visiting Roche, and found that the mining prospects were looking as promising as the harvest of this year. Although Roche is most peculiarly situated with regard to minerals it is strange that it is comparatively so little known commercially. In every country and nation there is always a man who occupies a chief position. In Roche this man is known as Capt. David Cock. He has "phoenix-like" risen from his ashes, and with the experience so dearly bought which he must have acquired it is to be expected that he would turn this to account. This is proved by the result. He has found a good company, I am given to understand, for the working of Roche Goonbarrow, and paid his shareholders 17½ per cent. dividend on the whole of the nominal capital subscribed in the first year. Success begets success, and he has purchased the celebrated Coldreath iron ore mine, and has commenced vigorous operations. He has also the Keten Iron Mine, the Tolldish Tin Mine the Fal Valley China-clay Works, the Gazzan Tin Stream, the Pitmoor Tin Stream, the Savath Tin and Clay Works, the North Bonny China Clay Works, and several other concerns of great importance. The great discovery of tin at Bugle—Rocks great lode—was due to his skill, energy, and speculation. He personally went to a very heavy expenditure there, and deserves his present success. Every month he pays to the workmen a total of about 1200l. The whole village seemed enthusiastic when questioned as to the popularity of their chief man, and I, although a stranger, cannot help acknowledging that he has done good things for isolated Roche. This week I hear the Rocks men are going to have a dinner. This is owing to the liberality of the directors in starting Robson's shaft at Rocks.

VISITOR.

## ROCKS TIN MINE, ST. AUSTELL.

SIR.—The directors of the Rocks Mine having satisfied themselves as to the ample reserves of tin on the great lode—which is 4 fms. wide where intersected from the trial shaft—have resolved to erect all the necessary plant to develop the lode upon a large scale. To do this a steam pumping-engine of 50-inch cylinder, and a stamping-engine of 36-inch cylinder for lifting 100 heads, are to be erected with all possible dispatch. Three new shafts are to be sunk—an engine-shaft and two whim shafts; the trial engine-shaft is also to be made a whim shaft. On Saturday last, October 16, the first sod of the engine-shaft was cut at one corner of it by Mr. Bantock, a large shareholder; the second sod at another corner by Capt. D. Cock, the manager; the third by Mr. W. J. North, of Wolverhampton; the fourth by Mr. G. R. North, the company's secretary; and the centre sod by Capt. Samuel Cock, the resident agent. Into each of the five pits was dropped a sovereign—in all 5l.—which was given to the men for a dinner to be had this week. The engine-shaft is named Robson's shaft. All the necessary buildings are laid out on a plan for immediate erection—account-house, store-house, carpentry, smithy, &c. A tramway connecting all the shafts with the stamping mill is to be laid down, so that the expense of carting will be obviated. The position of the stamping mill is very eligible, being at the top of a gentle incline, very suitable for all the metallurgical processes required in tin dressing. These works will put a little life into the population of the locality, because of the large number of hands which will be necessarily employed in carrying them out.

Truro, Oct. 18.

R. SYMONS.

## ILLOGAN, AND ITS MINES.

SIR.—The parish of Illogan adjoins that of Camborne for all its length—from its northern extremity (the Atlantic) to the southern, where they both touch Wendron. Tedydy, the residence of Mr. G. L. Basset, is in the parish. He is the owner of the greater part of the parish, which contains 8270 acres. Within the last half-century thousands of acres have been enclosed from the common. Except Carnbrea Hill and the mine wastes very little is left to be enclosed. Mr. Basset (or his predecessor) 20 years ago received for dues 20,000l. per annum. His rental is said to be about the same amount. The Basset family have held the Tedydy estates 800 years. They have always been regarded as liberal towards tenants of farms and mines. Tedydy farm and plantations cover near 1000 acres. The late owner, Lady Basset, expended very large sums in improving the farm and in experiments advised by her hind. Very few rich landowners who cultivate their own land gain one penny by so doing. But it is said that the late Sir R. R. Vyvyan gained 1l. per acre upon the farming of about 700 acres. He had a good hind in Mr. Foote, who went there in 1831, and is there still.

Like Camborne, Illogan contains numerous mines, some of which are of immense value. Wheal Basset has yielded about 300,000l. profit. At present the company confine their operations to the North Basset part of the sett, where an engine-shaft is being sunk to take the Great Flat lode, which has proved to be very rich in the adjacent mines of West Basset, &c. The shaft is expected to take the lode at about 170 fms. under adit, so that they have to sink about 50 fms. deeper to meet their object. Of course it is impossible to say where the intersection will take place. South Carn Brea Mine is now included in Wheal Basset, making the sett a very extensive one.

West Basset adjoins Wheal Basset at the west, and is a rich mine, after a time of poverty, during which a debt of 25,000l., or thereabout, accumulated at the bankers. At the quarterly meeting, held on Tuesday last, 1500l. were divided as profit on three months' working. All the debt is paid off; prospects very good. West Basset had been rich before the period of poverty.

South Frances lies at the south of West Basset, and is in contiguity with it. The Great Flat lode, so good in West Basset, underlies into South Frances at about the 185, so that it is fairly calculated that it will be just as productive there as it is in West Basset. You will remember the legal conflict which took place in 1858, and was continued for years, between these two mines, consequent on a disputed boundary—a rich lode being thereunder underlying into South Frances. The dispute arose on the question whether John Vincent's house (now demolished) was in West Basset or in South Frances sett. The description in the lease was vague; it said that a line should be drawn from a certain stone-post "to John Vincent's house," without saying to what part of that house. The lease had a line on the plan endorsed drawn to the north-east corner of the house, but the counterpart had the line drawn to the centre of the same house, whereas the plan in South Frances account house had the line drawn along the southern side of the house.

To obviate all future disputes as to boundary a proposition has recently been made by the committee of South Frances to the committee of West Basset for an amalgamation of the two mines. This proposition has been favourably received by West Basset proprietors, and there is a probability of its being carried into effect, which, in my opinion, will be a very proper measure.

West Frances adjoins West Basset and South Frances westward. It has been a good mine, but just now it is losing a little. The great flat lode, recently cut in the 132 ft. level, is likely to make it a rich mine again. South Dolcoath, at the north of West Basset, is idle. It has not been fairly tried. Illogan Mine, adjoining South Dolcoath, and formerly part of Tincroft, is idle. Capt. Teague worked it a short time. Tincroft Mine is far-famed for its yield of tin ore. It has probably a rich future. Carn Brea Mines embrace the largest area of any mine in the district, being a mile in length on the course of the lodes, of which there are many, and all productive. Cook's Kitchen anciently yielded large profits, but none have been given for nearly 80 years. New Cook's Kitchen was severed from Cook's Kitchen about five years ago. It is a poor thing. North Crofty paid about 100,000l. profit many years ago; but no one person would advance money to re-open it. South Crofty is poor, and has been a good while. I am afraid that the company's hopes of a dividend will never be realised. East Pool is a rich mine, giving larger div-



tends than any mine in the district. I believe Wheal Agar has been at work between 30 and 40 years; always "calling" for funds, but I understand that, after all, the scale is likely to turn. North Pool old mine gave about 80,000, profit, but the new mine was never worth opening; both idle. Tehidy Mine has been idle about 30 years; very poor. West Tolgus, now being worked by Messrs. Taylor and Co., is a profitable copper mine; it has had its "ups and downs." North Frances is joined to West Basset; it was worked by Mr. Thos. Garland about 20 years ago, but it has been idle about 15 years. West Wheal Towan was worked by Messrs. Taylor about 20 years ago as a tin mine; it would probably pay now if re-opened. New Wheal Towan is a small sett at Towan Porth; I believe that it is idle. East Wheal Seton, north of North Crofty, has been idle 10 years. Wheal Emily Henrietta, adjoining, has been idle about seven years. A short time ago I heard that it was to be re-started. R. SYMONS.

Truro, Oct. 18.

#### TINCROFT MINING COMPANY.

SIR,—I should be glad if any of your readers could inform me how it is that Tincroft shares still continue so low in price, in the face of the recent large advance in the price of tin. When tin was 82½ to 83½, Tincrofts were quoted at 16 to 16½; tin has now advanced to 87½ to 88½, but Tincrofts still remain at the old figure. Surely these shares should advance with the present improved position of the tin market. As, however, they do not do so it is only reasonable to suppose that there must be some cause for this continued depression, and I think, therefore, it is incumbent upon the executive to break their long silence and give the shareholders full information as to the real position of the mine. SPES.

#### THE DEVON COPPER AND BLENDE COMPANY

SIR,—Seldom have I read anything in the Journal that has given me greater pleasure than your report this week of the starting, &c., of the engine at Collacombe Mine. I notice the worthy chairman said in his speech that millions of money went abroad from this country to work foreign mines, &c. How true this is. Look at the Share List in the Journal. Now with regard to our mine and property. The following simple facts will show that no foreign mine now in existence is paying or can pay more percentage upon capital invested than we may reasonably expect ours to pay. I will take the mine just as it left off working 18 years ago (see *Mining Journal* report by the late Capt. James Richards, the manager of Devon Great Consols and captain of our mine). I do not allow for any improvement whatever in the lodes or mine, neither do I allow for the benefit of such splendid modern new machinery as we have purchased and partly already fixed. The last month's sale of copper ore when the engine burst and the mine stopped was 200 tons, sold at 5½ a ton, equal to 1000£ cash; add to this 300 tons of blende per month at (say) 3½ per ton, equal to 900£. Now, this makes produce sales for the year of 22,800£, which will pay over 300 per cent. on the present invested capital. Surely this is good enough, deny it who can. Forest Hill, Oct. 17. A SHAREHOLDER.

#### REVIVAL OF MINING IN THE TAVISTOCK DISTRICT.

SIR,—I have read with much pleasure the interesting accounts and the speeches made last week upon the occasion of starting the pumping-engine at Devon Great United Mine. I am well acquainted with the mining districts mentioned by Messrs. Peter Watson and Moses Bawden, and can confirm all they say about the rich mine situated on and around Kithill, and I think it is a great pity that some energetic men, like the above-named, cannot be found to start some of the once celebrated mines now lying dormant. Take, for instance, Kit Hill, Pengelly, Tonkin, Florence, and many others I could name. By the starting and careful working of such mines as these investors would find plenty of employment for their spare capital instead of rushing into gold mines at heavy premiums, and thousands of miles out of reach. I am a shareholder in many of our home mines, including Gunnislake, both Old and Clitters, Lady Bertha United, &c. The latter I consider to be one of the best mines in the county, and I have no doubt will, in fact must, pay large dividends to its shareholders if only carefully managed; the natural resources of this mine are seldom if ever met with. Look at the splendid stream of water brought from the River Walkham, more than sufficient for all purposes, and having a fall of, I should say, over 100 ft. to the River Tavy. Another great advantage in investing in our home mines is that the shareholder can enjoy a delightful run into the prettiest counties at the expense of a few pounds, at the same time see for himself what is really being done at the mines. A BELIEVER IN ENGLISH MINES.

#### GREAT LAXEY MINING COMPANY.

SIR,—It may seem a bold thing to criticise the management of a great and successful mine like Great Laxe, but the figures of its last balance-sheet appear to warrant it. The receipts of last half-year—or, rather, the amount credited for ore, &c.—were 26,248£, and the expenses 21,519£, showing a profit of 4729£. The increase of ore in stock was 3665£, making a total profit of 8394£. But the directors divided 12,000£, thus converting the credit balance at the commencement of the half-year into a debit one of 4290£. This, to use the words of the Chairman, "was very good, no doubt, for the bank, but bad for the mine." Why did they pay so large a dividend when they were obliged to borrow money to do so? This was on Aug. 7, yet on Oct. 13 another dividend (4500£) was declared, carrying forward, the Chairman said, 2250£; that is, in these two months the mine must have paid off the adverse balance of 4290£, given 4500£ in dividends, and earned a surplus balance of 2250£—in all 11,040£. Considering that the average profit of the previous half-year was only 1400£ per month, how has it thus suddenly risen to 5000£ per month? The mine is not richer, and prices of metals have not risen. A word as to the item "ore in hand not included in the balance-sheet." If this ore is clean and ready for sale it should be included in the balance-sheet; but if, as is most likely, it is not yet ready, but in various stages of dressing, why is it valued at the same rate per ton as the clean ore? Such an assumed value, without deducting the cost of making it marketable, is certainly misleading. The steamship account is anything but a rosy one, the profit for the half-year, without charging anything for depreciation, being 71 only. Since the date of the account there has been another collision, and the vessel will, no doubt, again require repairs.—Oct. 20. A SHAREHOLDER.

BELOWDA.—Operations at this mine during the past few months have been pushed on with vigour, the lodes have been laid open, ready for stopping away, some hundreds of tons of tinstuff being raised and placed convenient for the stamps, the machinery has been undergoing the necessary overhauling and repair, and now that the concern is on the eve of starting into still more active life it presents itself to all practical men as one of the model mines of the county. In the space of almost a matter of weeks two valuable tin lodes have been successfully opened up, one of which, recently discovered, is proving to be an extraordinary deposit, occurring within a few feet of the surface, and is found by trial pits to extend several fathoms in width almost throughout the whole sett; the supply of tinstuff from this lode is considered to be inexhaustible, and many thousands of tons are already laid open by surface workings ready for breaking away at a cost of only a few pence per ton. Tramroads have been laid down from the lodes direct to the stamps, other necessary surface works have been laid out, the dressing-floors, buddles, &c., are now under repairs. The complete and efficient set of machinery now almost ready to be put in motion consist of a powerful engine with two 10-ton boilers, a battery of 48 heads of stamps, a Blake's patent stone crusher, with separate engine, drawing its steam from the large boilers, and all the necessary dressing and other appliances. The surface is covered with neat and substantial granite buildings, engine and boiler houses, carpenter's shop, smith's shop, office, &c., while all the floors, buddles, &c., are covered in by a long range of wooden shedding; and the whole property as now standing must afford the company the greatest satisfaction, and reflects a considerable amount of credit on the local management. The proprietors are to be congratulated particularly on the recent discovery

referred to, which has just been inspected and reported on by one of the best authorities in England. In his report he says—

The Beacon Burrow lode has been worked as an open quarry near the top of the hill. This lode is really a stanniferous vein course from 2 to 6 fathoms in width. I found its produce to vary from 7 lbs. up to 100 lbs. of black tin to the ton of stuff, the average (without any selection) being 23 lbs., or a trifle over 1 per cent. From the Beacon Burrow lode an unlimited supply of stuff is at once obtainable. Each man employed would break about 4 tons per day, at an average cost of about 10d. per ton.

The work of starting and laying open the mine and bringing it to its present highly satisfactory state has been done under the direction and management of Capt. Parkyn, of Roche, who on its completion retires by arrangement to superintend a similar work for the same company in another part of the county. Mr. J. H. Collins, of Truro, has been desired to take the management of Belowda, and has consented to do so; this is quite a sufficient guarantee for the future working of the concern. Mr. Collins, whose name and reputation as a Fellow of the Geological Society, the County Analyst, and a Consulting Mining Engineer, are widely and favourably known, will devote his attention to this interesting and valuable property, and under his management it is anticipated that Belowda will justify all the expectations entertained and prove to be a very profitable undertaking.

#### REPORT FROM CORNWALL.

Oct. 21.—The condition of mining matters in the West this week affords very little material for comment. After ten months have elapsed we stand, so far as the figures for tin are concerned, just where we did at the commencement of the year, which is very nearly midway between the highest and the lowest points which the market vagaries have indicated. So far as we can see, however, there is really no reason why we should not end the year as well as we ended January, or within a trifle of the standards of that date. As a rule, our "runs" up or down have been in series, and so far, we have only just commenced an advance. That this is the general feeling is evident from the condition of the market, which, as a rule, is displaying remarkable firmness, while in certain mines the shares are very strongly held. In fact, we should not be surprised to see some very remarkable advances in a few individual speculations.

Amalgamation used to be much more the fashion than it has been of late years; and there is hardly a large sett now worked which is not more or less made up out of the consolidation of different ventures, the history of which has now been pretty well forgotten. Probably no amalgamation ever paid better for the time than that which resulted in the formation of the celebrated United Mines of Gwennap. We are inclined to look very favourably on the proposal to amalgamate West Basset and South Frances, and the business done in the shares of the two mines since the project was launched is very good evidence of the estimation in which it is held. The difficulties in the way are by no means serious to business men, and everything might easily be arranged in a very short time. So far as we can see, the advantage, setting one thing against the other, would be about mutual, and as good a basis of amalgamation as could be desired may be found in the actual market price of the shares in the respective concerns, taken together with their number, which gives, of course, the current value. Thus, taking South Frances shares at 15½ (which is a fair figure at the present time, though they have been done higher), the value of the 4500 shares in that concern is 67,500£. Taking West Basset at 16½ 10s., a figure which bears about the same relation to their average as the 15½ quoted for South Frances), the value of its 6000 shares is 99,000£. On this basis it will be seen that West Basset is worth about 30 per cent. more than South Frances. If the shares were of precisely the same value the difference in number would, of course, create no difficulty. As it is, it would be better to re-arrange the capital altogether than to attempt to follow out the plan of exchanges so commonly adopted in the amalgamation of railway stock.

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Oct. 21.—The meetings of the trade yesterday and to-day were chiefly noticeable for the firmer tone of West Coast and Welsh hematites. The large purchases made of late by the Northern steel makers of hematites, added to the heavy lots of Spanish ore that the Americans have gone in for, strengthened sellers' hands considerably. Quotable rates were, however, unaltered at 3½ 10s.; native cinder pigs were 2½ 2s. 6d. to 1½ 17s. 6d. Other pigs remained at last week's rates. An authoritative return just available gives the number of furnaces now in blast in South Staffordshire at 45, which is 18 fewer than about six months ago. The finished ironworks are doing more this week, the result of the orders booked at the quarterly meetings. Earl Dudley's works have some colonial and home Government contracts in hand. From the new "list" of Messrs. John Bagnall and Sons (Limited) it appears that, as compared with their list of May 29 last, some sections of bars are reduced 1½ per cent, while two or three sections are reduced 1½ 10s. On most of their bars, however, as also on other descriptions of iron, the drop is only 10s. per ton. Unbranded bars are upon the market at as low a price as 5½ 12s. 6d. The coal trade is slightly better than before.

The Darlaston Coal and Iron Company directors in their annual report state the year's profits available for distribution amongst the shareholders amounts to 1661£, and the whole of this is required for debenture payments. The depressed state of trade, and a fire which broke out in the eight-foot seam of one of the collieries at the time when trade was brisk, thus reducing the output, are mentioned as having tended to prevent most satisfactory results. The ironworks still remain idle, "the directors not having felt at liberty to divert from the collieries any portion of the not too ample funds at their disposal. An effort is, however, about to be made to form a separate company to rent and work one portion of them." The company now hold four colliery leases, comprising the Holly Bank, Mitre, Cissington, and Spring Hill properties.

It will be recollected that Mr. Frederick W. North, mining engineer of the Rowley Hall Colliery, near Dudley, and son of the ex-mayor of Dudley, Mr. W. North, left England some time back for Natal, to explore the coal-fields of that colony on behalf of the Colonial Government. Information just received in this district from Mr. North states that the best workable coal in Natal has been found to commence between Helpmakaar and Dundee, and very important coals, from 6 ft. to 12 ft. thick, and extending over many miles of almost uninhabited country up to Newcastle, are now proved to exist. But, although coal at the present time is sold in Pietermaritzburg for 4½ per ton, and at Durban at 3½ per ton, and these coals could be put on the bank or into wagons at 10s. per ton, Mr. North thinks that the deposits he has surveyed will be of no service until they are placed under railway communication. This would mean the construction of a line some 150 miles in length. [An article on this subject appears in another column of this day's Journal.]

A meeting will be held in Wolverhampton on Nov. 6, when the arbitrators under the South Staffordshire Mines Drainage Act propose to make a draft mines drainage award for the Old Hill district. The rate required to be levied is set down at 3d. per ton on fire clay and limestone, and 6d. per ton on ironstone, coal, and slack. The mines on the south side of the River Stower are exempt from ratel. The rate is to endure for one year. Colliery owners and occupiers in the district affected may give evidence before the arbitrators.

The Hanley magistrates had before them on Monday James Campbell, employed at the Berry Hill Colliery, charged with neglecting to set sprags at the distances prescribed by the Coal Mines Regulation Act. The Government Inspector, Mr. R. H. Wynne, said that the sprags were set 7 feet apart instead of 6 feet. A man had been killed in the pit from the neglect of this rule. The defendant was fined 10s. and costs.

In consequence of an accident to the winding machinery at the colliery of Miss Glover, Longton, North Staffordshire, 190 men were kept in the pit from Friday morning till Saturday mid-day. Considerable anxiety was felt by the friends of the imprisoned miners, but on both days food was lowered down to them, and on the latter day they were brought up safely to the surface. Work was resumed on Tuesday morning.

Messrs. C. Akrill and Co., of Gold's Green Foundry, West Bromwich, have during the present week cast a large roll of the following dimensions. It is 16 ft. long, 3 ft. in diameter, and the weight over 16 tons. The time occupied casting this large roll was only 3½ minutes. This roll is destined for a large Sheffield firm, for rolling armour-plates.

#### REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Oct. 21.—Resuming our journey from Dolgelly to Barmouth, we pass on our right hand the famous gold region of Merionethshire. This gold producing district stretches from the junction of the Rivers Wynion and Mawddach, about two miles from Dolgelly for about five miles towards Barmouth. It fills the country lying between the road from Dolgelly to Trawsfynydd, passing over it in places to the north-east, down to the estuary of the Mawddach. Here, in the year 1844, at Cwmeisen Mines, to the east of the Trawsfynydd road, Mr. Arthur Dean found gold in the refuse ore on the debris heaps of these mines; then worked for lead. Subsequently Mr. Dean examined the whole district, and found gold in many of the quartz veins traversing the rocks, and also in lodes containing copper and lead. This search was followed by trials by local men, among whom were Messrs. Parry and Williams, who, after many disheartening failures, discovered at the Vigra and Clogau Copper Mine a bunch of gold to the value of 36,000£. A rush of speculators into the district now took place, and a mania for gold mining commenced like that now prevailing concerning South-West India. Every quartz vein was a gold reef, and every bit of white spar the location of the precious metal. As now, high prices were paid for the privilege of making explorations, and the hotels, inns, and farmhouses swarmed with directors, secretaries, engineers, assayers, and vendors and vendees with their retainers. Massive machinery was dragged along the roads of this mountainous district, then unapproachable by railways, and costly works were set up. The result was ruin. The costly machinery still lingers upon the hill sides, surrounded by moss and fern, and the grass grows over many a mining enthusiast of that time. One mine—the Vigra and Clogau—still lives, and its production of gold during the last five years has averaged 424 ozs. Last year 4529 lbs. of ore treated gave 447 ozs. 7 dwts. 21 grs. of gold. Next year I hope to report some good results from the new movement under the guidance of Mr. Readwin. Alluvial washings for gold have not hitherto been successful in this district. Perhaps the gold-bearing rocks are too limited in area, and the streams too impetuous to allow of the accumulation of detrital gold.

Copper and lead mining, which, as we have seen, were earlier mining industries than that of gold, have not been successful in this district. Copper ore, to the value of many thousands of pounds, was formerly obtained by the burning of the turf from the bog near Moel Hafod Owen, which had become charged with copper by the infiltration of water flowing from rocks containing copper ores. It would seem, however, that in the strata themselves the ores are too widely diffused, and of too poor a quality to pay for mining. Hence the excellent machinery at Glasdir Mine is for the most part idle. As we reach Arthog station we see a range of slate quarries on our left. These have been opened in the Lingula Flags, the underlying Lower Cambrian strata being seen coming down beneath them on the other side of the estuary. These quarries are now all idle. The rock is pyritic and the cleavage rather uncertain, so that in times of depressed trade such quarries are the first to suffer and the last to recover. The dip and succession of the Lower Cambrian strata are well shown on the Barmouth side of the river, and with a look at the flexuosities of their bedding our mining journey comes to an end.

The large mining village of Talybont, in Cardiganshire, was all alive last week. Wagons piled with ore were coming down from the Cambrian Mines. In and out of the hotel were owners, directors, managers, and agents belonging to the Cambrian, South Cambrian, Tan-yr-Allt, Tynewydd, Penpompren, Bryn Dyfor, and other north-east Cardiganshire mines. It was evidently pay-day among the men who were congregated in their best clothes. A hopeful feeling seemed prevalent among those assembled. Among other things talked of were the good machinery at South Cambrian, the resuscitation of Tynewydd Mine, the making of 40£ a month profit at Tan-yr-Allt under the new management of Capt. Charles Williams, of Taliesin, the discovery of ore at the Ynys, or Taliesin Mine, the erection of new machinery at the Roman Mine, the taking of Ynys Stedfa Mine by a Liverpool company, the rich discoveries of lead ore at Bryn Dyfor Mine, and the scheme for the working on a more extensive and systematic scale the united properties of Penybant, Penpompren, and Erglodd. We want one thing more to complete the list, and that is the resumption of work at the Talybont Mine with the deepening of the mine. It was not pleasant to see in the very midst of all this mining life the nice dressing plant of this mine lying quite idle and silent.

#### TRADE OF THE TYNE AND WEAR.

Oct. 20.—The coal trade, on the whole, is better; the demand for most kinds of coal and coke is certainly improving, but of late some of the large steam coal works in Northumberland have not been kept fully going, owing to a want of tonnage. There is a good demand for both best and second-class steam coal. The demand for house coal has also improved considerably, and the price has advanced considerably in the London and other markets. The demand for coke continues good, but the price of this product does not increase much, owing to the large production and the exertions made during the past few months to increase the make of coke at works when the demand for raw coal was deficient. The consumption of this article in Cleveland is very large, and an increased quantity is also sent to the West Coast; but there is in that district greater competition, not only from the increased make of coke in Cumberland, but also from an increase in the quantity sent from the Barnsley district, favoured by the low rates charged by the Midland Railway Company. The price of coke in South Durham is very firm, with a rising tendency, but quantities are now sold at prices ruled by the sliding scale price of pig-iron.

VISIT OF MINING AND MECHANICAL ENGINEERS TO MARSDEN NEW WINNING.—About 300 of the members of the Institute and others paid a visit to these important works on Friday, Mr. G. C. Greenwell, the President of the Institute, was at the head of the visitors, and Mr. John Daglish, the mining engineer, explained the process of sinking by the Chaudron system, which was in actual operation. By this system the shaft is simply bored by a large circular cutter through the water-bearing strata, the debris being brought out by a peculiar arrangement. The cutters and apparatus for lifting the debris are, of course, worked by machinery fixed at the top of the shaft; and when the bore is completed to the required depth a metal ring, or tub, is lowered down, and when secured the water filling the shaft is pumped out, and the further sinking through the shales is proceeded with in the usual manner.

The first shaft at Whitburn (now called Marsden) was completed by this process some time ago, and the shaft has been sunk a considerable distance through the shales since that time, and some minor seams of coal have been passed through, and one of those will be worked for the use of the engines at the works. The total depth now reached at this shaft being a little over 100 fms. The main workable seams, which are very valuable, will not be reached for some time to come as they are at a great depth—these are the Maudlin and Hutton seams, which have been worked very extensively at the Harton and St. Hilda Collieries. They produce house coal of excellent quality, the Harton house coal being the best at present worked on the Tyne. The royalties at Marsden are of large extent, as in addition to the coal lying under the land the coal under the sea will also most probably be worked to a large extent. The surface also there is inexhaustible beds of excellent limestone, and these beds are now worked and sold in large quantities in the district. With respect to the comparative cost of the Chaudron system and the ordinary method of sinking, it is stated that the former is much more costly than the latter, but this we consider is a mistake. At Marsden, no doubt, the Chaudron system will prove to be costly, owing to the extreme hardness of the limestone to be bored through.



when the strata are of moderate hardness and the quantity of water very considerable, there is little doubt that the Chaudron system will compare favourably with the ordinary method as to cost, and of course in some cases, owing to the enormous feeders of water met with, the Chaudron system is the only plan possible to command success.

**THE SEAHAM EXPLOSION.**—Since the workings in the Maudlin seam have been closed, where the bodies not recovered lie, the roadways and airways have been so far improved as to greatly benefit the ventilation and state of the other districts in the pit. The natural ventilation with only a small steam jet at the top of one of the shafts amounted to nearly 150,000 cubic feet per minute. A furnace has now been lighted in one of the upper seams, and the ventilation is now in a workable state if the men agree to work, which they are object to at present. There is of course great diversity of opinion as to the point where the accumulation of gas occurred, and also as to the means by which it was ignited, but all are agreed that the explosion did not occur in the internal workings, as the indications show that the fire extended from some point on the road in that direction. The adjourned inquest was again opened on Tuesday before Mr. C. Maynard. Mr. R. S. Wright, barrister, appeared for the mine, Mr. J. Edge, barrister, attended for the owner of the colliery, the Marquis of Londonderry; Mr. Atherly Jones, barrister, attended for the National Miners' Association, and there was a numerous attendance of viewers and the public. Mr. Bowden produced the plan of the workings, which is upon a scale of 25 in. to the mile. Mr. Stratton, the manager, described the shafts. There are two shafts, one shaft being divided by a brattice in the centre. The No. 1 pit is at a distance of 130 yards from the other shaft. No. 1 is the downcast, and No. 3 is the upcast. Coals are worked from the main coal—Maudlin and Hutton seams. The main coal is at a depth of 218 fms.; the Maudlin, 227 fms.; the Hutton seam, 225 fms. All the coals are drawn from two levels, as there is a 25 fms. trouble over the shaft, and drop staple are also used to lower the coals from the upper seams. The colliery is ventilated by means of furnaces and boiler fires. The position of these were pointed out, and the managements explained at length by Mr. Stratton. The total air current averages from 320,000 to 330,000 cubic feet per minute, of which the main current is divided into numerous splits in the various districts of the workings. Mr. Stratton then explained the extent and position of the various goafs or exhausted districts in the pit. There are four chief overmen and eight sub-overmen. The pit was worked by three shifts of hewers from 4:30 A.M. to 11:30 P.M. There were 231 men down at the time of the explosion, of whom 67 were not alive.

The Iron Trade continues quiet; the feeling has improved, but it is not noticed that prices continue low, and afford little remuneration to the producers; but prices are hardening, and there is increased confidence, consequent on the great demand there is for pig iron of some kinds of finished iron, notably for shipbuilding iron of all kinds, which must, and indeed has, created a great demand for forge iron. Cargoes of iron and coal are being pushed forward in anticipation of the winter closing the Baltic and Northern ports. The demand both for shipment and inland has been good during the past week. Pig-iron is steady, at 39s. for No. 3, and a little advance has been made in ship-plates and some other kinds of manufactured iron. On Tuesday, at Middlesborough, the market was very firm, and a slight rise was established. The Wear Rolling Mills, at Sunderland, have been started. The foundry trade continues dull.

The important metallurgical process carried on at Messrs. Bolckow, Vaughan, and Co.'s steelworks, at Eston, near Middlesborough, is in every way successful. It will be remembered that Messrs. Bolckow & Co. commenced some time ago the manufacture of steel from Cleveland ironstone by the Thomas-Gilchrist process, and that practical success attended their efforts; but, to obviate a slight mechanical difficulty, and to initiate the process on a larger scale, it was decided to extend Eston Works, and to erect two converters, each of 400 capacity. After a short trial of one of these with hematite iron on Monday they were turned to the production of steel from Cleveland iron. The results have been anxiously looked for by the metallurgical world, and the working of the new process at Eston has been witnessed by the officials of the company and by engineers and metallurgists of eminence. It is stated semi-officially that the results—mechanically, chemically, and commercially, so far as they have gone—are successful beyond the expectations of the promoters. Rails of steel in other shapes have been tested, and have borne all the tests satisfactorily. The process will be continued regularly.

#### REPORT FROM DERBYSHIRE AND YORKSHIRE.

Oct. 21.—There has been an improvement in the state of the Derbyshire coal trade of late, so that many of the colliery owners are now able to find more employment for their workpeople. Still the price of coal is far below what it should be to make the trade remunerative; but the fact is, that during the year operations have been carried on at many places at a serious loss, and the men have been seeking for an advance of wages, although what rise there has been in the price of coal has been but slight, whilst there are contracts in hand at the old and particularly low rates. Steam coal has been in fair request for the season, whilst there has been a steady demand for gas coal to various works. Engine fuel is still in but moderate request, but coke has sold tolerably well of late, a good deal being sent to the smelting establishments in Sheffield and the West. The production of the blast furnaces has been well kept up, and stocks have not materially increased of late, although the demand has been rather less active, but rates are now firm. In the iron trade there has been no change of late, but the output of the blast furnaces is not by any means so large as it could be were there more orders in hand. Some of the foundries are fairly off for work, but others are the reverse of busy. At the steel rail works at Middlesborough business has been good, and there is every prospect of its continuing so. In the lead districts work goes on much as usual, the price of ore being comparatively trifling considering the number of mines that are opened out.

Some branches of the Sheffield trade have been quiet, and the demand anything but well employed, but a change for the better is recently set in, so that there is more activity discernible at different places. A good deal of pig is being made at the furnaces, and the consumption has also been tolerably heavy. America is a capital customer, taking extensively of steel as well as of rails, and other description of hardware. There is still a good demand for plates, sheets, hoops, bars, and merchant iron generally, and the mills have been running well. Telegraphic wire has also been in brisk request, and the mills engaged on it are still working well. The make of Bessemer steel is large, for the demand for steel is for both home and foreign lines is considerable, whilst there is considerable activity with respect to tyres, axles, wheels, and other railway materials. The cutlery houses are fairly off for orders, whilst both the Continent and America are taking more freely of the trade. The trade is moderately good, and the question of a resumption of wages is still on the tapis. The foundries, as a rule, are not doing well, and less has been done during the year so far than formerly in the past.

South Yorkshire there has been a little improvement in the trade, but prices are still low, whilst the colliers are seeking for an advance of wages, their representative on Wednesday having sent a circular to the colliery owners requesting them to advance the price of coal to such an extent as would allow of their advancing miners wages 15 per cent. It need scarcely be said that the colliery owners in any one district are powerless to advance the price of coal. They must sell at a certain market rate, or keep their mines at home.

The year has told severely on certain limited colliery companies, and the heavy losses. Thorp's North Gawber is evidently in a bad state, the men being under notice to leave, as the place can be worked at a loss. The Dodworth Silkstone Coal Company is in liquidation—a petition for winding-up having been pre-

sented to one of the judges, and a time fixed for hearing it. The colliery was bought for something under 40,000*l.*, and in good times was formed into a limited company with a large capital. Another petition has been presented for the winding-up of the Silkstone Coal and Iron Company. This was a comparatively small concern commenced by two working men, and was sold by them to a few individuals, when a company was formed. It was proposed in the prospectus that the ironstone found in connection with the coal should be smelted on the ground. But no furnaces were erected, and but little was done with the coal, so that the whole thing has tumbled to pieces, as was expected would be the case by those at all acquainted with the locality and the colliery.

There have been several disputes at collieries in South Yorkshire of late, one at Earl Fitzwilliam's Shibbin pits, which led to the men striking, but they afterwards resumed work at a reduction of wages equal to about  $\frac{1}{3}$  per cent. At Hoyland Silkstone the men received the usual notice to leave, but it has since been withdrawn, and the men returned to work.

#### REPORT FROM THE FOREST OF DEAN.

Oct. 21.—It is a matter of congratulation to be able to write hopefully of the Forest Coal Trade; more vessels than for some time was the case are making their appearance at Lydney Docks, and an encouraging tonnage of coal is carried over the Severn Bridge to the Bath district, and as far as the coast of Dorset and intervening markets, besides a fair quantity to Sharpness Docks. It is a pleasing feature, as showing the usefulness of the new bridge, to note that frequently a heavy coal train, containing its supply from the Forest pits of the previous night's output, passes over the bridge in the morning, and somewhat early in the day is delivered in the districts just specified. There is evidently reason to hope for a good winter season.

An advance is likely to take place on the 1st proximo of 1*s.* a ton. The masters ought to understand what is best to be done; but I incline to the belief that 1*s.* a ton advance is rather risky, and that 6*d.* per ton advance would be better policy and much safer. The lesson taught by former experience on the subject is, that trade lost by unwise action is very difficult to be regained, seeing that connections broken will not be likely to be reformed without very special reasons. It is much to be hoped that prices will be so managed that, from that source, there will be no check to the Forest trade.

The Iron Trade cannot be said to be buoyant, as the tendency of prices is downward. The Forest Vale Works have been suffering from some alleged irregularities on the part of confidential officials—current rumour crediting one of them with accidentally (?) burning some books containing important accounts. Since, as well as for some little time previously, the works have been only very partially in operation. The Tinplate Trade, although understood to be fairly in operation, is not considered thoroughly satisfactory; the Hawke-well Works, however, have been kept well going.

Reference was made to the large number of gales announced for forfeiture this week, and which purpose caused much dissatisfaction among those concerned. Some applied for an extension of time, but with what success I have not heard. Those who kept their dead rents paid up consider forfeiture a great hardship, not to say injustice. It certainly cannot square with equity to pay five annual sums on account, and then lose all right and title to the several gales concerned. It might be right to inflict a small penalty for non-paying a gale during the five years allowed, on the ground of keeping others out, but little beyond what is nominal should be imposed prior to the expiry of the five years. In the purchase of property generally, a deposit relatively small in amount is only forfeited in case of failing to complete the purchase; and although the case of gales is different to other kinds of property, it does not appear to be right to the parties down to pay considerable annual sums, and then confiscate the full aggregate sum and seize the property into the bargain. Until in working possession for securing returns upon investment of capital, the annual dead rent should only be a nominal sum. Even at the end of five years there might exist reasons for an extension of time to the gale—but, perhaps, it would be better to reason to make an extension of time final—as it would not be equitable towards the Crown to hold a sort of conditional lease on false pretences. But the law as it stands at present is far from being satisfactory, or even just. I do not think it all unlikely but that an attempt may be made in the course of a session or two to legislate on mineral and other Crown property in the Forest. Indeed, as the Monmouth and Westbury-on-Tyne Unions have made common cause on the rating grievance in reference to Crown property by preparing to ask for Parliamentary enquiry there is a probability of that accelerating Parliamentary action on other Forest questions of importance. In the meantime, it is desirable that all moot points should come to the front and be well thrusted out to give the Legislature definite ideas of what ought to be attempted in framing and carrying their measures to a successful issue.

#### LLAY HALL COLLIERY COMPANY.

An important and largely attended meeting of the shareholders in the Llay Hall Coal, Iron, and Fire-brick Company (Limited) was held on the 12th inst. at the works near Wrexham. Despite the bad time through which the coal trade has passed, this company is in a fairly prosperous condition, and a rise of nearly 1*s.* per ton would enable the directors to declare handsome dividends. It produces an admirable description of coal suitable for every purpose. It has contracts with the London and North-Western and the Great Western Railways for the supply of their locomotives, and the vessels of the National Steamship Line between Liverpool and New York perform their rapid voyages with the aid of this company's fuel. With such customers as these there is no room to doubt the excellence of the coal, and the mere fact of the company being able to weather the worst times the coal trade has ever known is a strong guarantee of the efficiency of the management and the intrinsic merits of the undertaking.

On arriving at the works the shareholders were first shown over the surface arrangements, and subsequently some of the more adventurous spirits explored the levels beneath. The company is fortunate enough to possess a railway one mile long, with two locomotives and 300 wagons. A junction is effected with the neighbouring railway, which practically puts the property in connection with all the markets of the world. It also has a large number of miners' cottages, which are yielding a profit upon the purchase price.

Coming to the colliery proper, there is, first, the shaft, which is 13 ft. in diameter, and at present 254 yards deep, fitted with all the most modern appliances for raising and receiving the coal. The weight raised each time the cages come to surface amounts to about 2 tons, and as the full cages ascend the empty ones descend, and thus the process of raising and lowering continually goes on with the quickness of thought. As the coal is raised it is weighed at the machine hard by, undergoes a kind of sorting process at the screens, and having been consigned to the railway wagons beneath, is dispatched eight trucks at a time to its destination. In the engine-room is a powerful pair of 30-inch cylinder direct-acting winding engines, capable of raising 800 tons per day of eight hours with perfect ease. In a second engine-room there is a pair of 14-in. engines, and in a third a pair of 20-inch used for underground haulage, the whole of the appliances being supplied with steam from seven large boilers.

Those who descended the shaft and made an examination of the underground workings were able to see that the company's supply of coal is practically exhausted, and that a failure of output up to a thousand tons a day for many years to come need not give the shareholders one moment's anxious thought. For 800 yards on one side, and 600 on another, there is coal to be seen in every direction. There are, in fact, five seams in succession, giving a working thickness of between 30 and 40 ft. Mr. Clark informs us that there must be in the 800 acres owned by the company at least 33,000,000 tons of workable coal. Other features to be noted underground are the large Tangye pumping-engine, the tramways worked by horses, and ventilating furnace. Throughout the works both at underground and at surface, one cannot fail to observe that no precaution which human ingenuity can devise has been omitted which could conduce to the safety and comfort of the colliers.

The most profitable part of the works at present is that devoted to the manufacture of bricks, tiles, ornamental fire-clay of various kinds. Operations are proceeding here very actively, and the shareholders were much interested in observing the various processes at work. White, red, and blue clay is found upon the estate, and we were led to understand that the company is at present fulfilling large contracts, besides which it has a good stock of various fire-clay productions on hand. The entire colliery has been laid out in an

admirable manner, and reflects much credit on Mr. Clarke, the manager.

At the meeting which followed this inspection the Chairman of the company, Mr. Francis Bennock, stated that the capital account was on the point of being closed. He said that it had taken the directors about eight years to bring the works to their present complete state, and that though numerous forebodings of a dismal character had been indulged they had all proved to be baseless, for the colliery was in a better position than was anticipated, the only thing against it being the terribly low price of coal. Every seam of coal expected had not only been found but found of a better quality than was previously imagined, so that now they had an aggregate of 33 ft. of coal in 750 acres; in fact, he said they had proved an area of coal sufficient to employ them for 35 years at an output of 1000 tons a day. The manager, Mr. Clark, confirmed these statements, and the general impression left upon the minds of the shareholders was extremely favourable. The company is in a good financial position, but the directors wish to close the capital account by issuing the remaining 4500*l.* worth of shares and 4500*l.* worth of debentures. These will no doubt be rapidly absorbed now that on personal inspection the shareholders have satisfied themselves of the great value of the property.

#### Meetings of Public Companies.

##### WEST CHIVERTON MINING COMPANY.

A four-monthly meeting of the shareholders in West Chiverton was held at the Account House on the mine on Tuesday, Mr. Granville Sharp, the Secretary, presiding. The statements of accounts for twenty weeks (ending Aug. 7) working showed a loss on that period of 1745*l.*, including 275*l.* 12*s.* 6*d.* for land destroyed, and balance due to bankers of 2552*l.* The arrears of call were 1669*l.*, of which 720*l.* was considered bad. The balance of liabilities over assets was 879*l.* 11*s.* 3*d.*, to which may be added the 720*l.* arrears of call considered bad, making the amount of deficits 1599*l.* 11*d.* 3*d.*

Mr. H. W. SHARP (London) asked the Chairman whether the 2552*l.* was part of the old debt, or was it new money borrowed for current expenses?

The CHAIRMAN: It is money borrowed for current expenses, and is entirely a new debt. This amount has, since the accounts were made up, been reduced by some 350*l.*, so that we are at the present moment only about 200*l.* in excess of the limit authorised by the shareholders at a meeting held a year ago—that limit being 2000*l.*

On the motion of Mr. LOVELAND, seconded by Mr. JOHN BROWN, the accounts as printed and circulated amongst the shareholders were taken as read.

Capt. RICHARD SOUTHEY (the manager) reported as follows: Since the last meeting we have completed drawing up materials from the 70 at Hawke's shaft to surface, replaced the footway, and repaired the shaft in different places, where it was found necessary to do so, down so far as the 80. We have cleared and secured the 80 east about 15 fms., and driven on the course of the lode about 5 fms., which is 2 ft. wide. Since we commenced operations here the lode has improved in value, being worth at present 7*l.* per fathom for lead, and driving by six men at 7*l.* per fathom. Going east in this direction we have a piece of unexplored ground for 100 fms. long, containing the same lodes which proved so productive in the western part of the mine. In speaking of this part of the set there is another very important feature I would call your attention to, and one which I consider should not be lost sight of—a north and south (or counter) lode will come in contact with the east and west lode, which we are now driving on about 45 or 50 fms. east of the present end. What effect this will have when the two lodes form a junction remains to be proved; but I may here add that all practical miners feel a deep interest in lodes when they are coming together, especially when crossing in opposite directions. Perhaps it would not be amiss for me to inform you that I have a thorough knowledge of the existence of this counter lode. Having held an interest in the adjoining mine for some years, I had an opportunity of inspecting it on several occasions at the time when it made a grand deposit of silver-lead ore; and, judging from the strength and very good appearance of this lode when I last saw it (and it was then pretty nearly driven home to our boundary line), I fully believe that good results will follow from this piece of ground leading to the junction of the two lodes. Therefore, in looking at the recent improvement which has taken place at the 80 east, coupled with the fact of having the counter lode before us, I am of the opinion that our future prospects in this direction are very hopeful. In the 70 cross-cut, south of Hawke's shaft, during the past four months we have driven 9 fms. The progress here has been slow in consequence of drawing the materials to surface, which has already been explained and forwarded to the company's office. The end is being driven, by four men, at 10*l.* per fathom; 3 to 4 fms. further driving will bring this cross-cut under the perpendicular of the lode where seen in the pits close to surface, but then it must be borne in mind it underlies south, and consequently we have this against us. Therefore, it is impossible for any one to give a correct estimate to a few fathoms where the lode will be intersected. The stratum of ground which the cross-cut is passing through now is everything that could be desired by the company for the production of silver-lead, and this, together with the quantity of water which the end is letting out, strengthens my opinion that a good lode is before us. We are still persevering in clearing the 80, west of Batters' shaft, our principal object being to get to the north lode, where I have no doubt we shall find lead in paying quantities. In conclusion, I beg to say we have about 450 tons of blende more to deliver to Messrs. Brown and Kimmel to complete the contract of 2000 tons. This would have been delivered two months since had it not been for want of water to dress it up to the percentage as per agreement. This delay, I scarcely need mention again, was occasioned by suspending the deeper levels and waiting for the water to rise to the 80 fm. level to enable us to commence pumping for dressing purposes. Notwithstanding the fact that our returns for the past four months look small on paper, we have delivered over 200 tons of blende towards the 2000 tons contract, and after the balance is wiped off (which I hope to accomplish between this and the next meeting) regular returns will be made, which will gradually bring our financial position into a healthier state.

Captain SOUTHEY, in reply to several questions put by Mr. H. W. SHARP, explained that the contract price for the blende was 2*l.* per ton for 1000 tons, and 2*l.* 6*d.* per ton for the other 1000 tons, provided they dressed it up to a certain standard—25 per cent. If they had nothing to do but the raising and preparing the ore they could make a profit. They were making a very good profit on the ore, but the dead work they were doing underground, pumping the water, driving levels, &c., swallowed it up. They ought to return about 150 tons of blende per month, including what they got from the halvans. They got on an average for their blende about 18*s.* per ton profit.

It was stated that the committee of management had had the mine inspected by an independent mining agent, whose report was read at the meeting. Mr. HEAP (London), one of the committee of management, observed that at the last general meeting certain shareholders appeared to distrust Capt. Southey's opinion in regard to West Chiverton Mine, as was very often the case in non-paying mines. The committee, on behalf of the shareholders and all concerned, thought it advisable to have an independent inspection of the mine, and they were pleased to find that the report of the inspecting agent fully endorsed Capt. Southey's opinions and recommendations.

Mr. J. HOLMAN proposed, and Mr. HEAP seconded, and it was carried unanimously, that a call of 10*s.* per share be made, payable in two instalments of 5*s.*; the first on or before Oct. 30, and the second on or before Dec. 15.

A vote of thanks to the Chairman, proposed by Mr. JOHN HOCKING, jun., brought the meeting to a close.

##### EAST CHIVERTON MINING COMPANY.

Prior to the business of the meeting the shareholders, in company with some of the shareholders in the West Chiverton Mine, paid a visit to the mine, where they were much gratified with the ore on the floors being prepared for the market, and also the contents of the lead house.

A four-monthly meeting of adventurers was held at the West Chiverton account-house on Tuesday.

Mr. THORNMAN WOODWARD in the chair. The financial statement showed that the labour costs amounted to 861*l.* 2*s.* 1*d.*; merchants' bills, 136*l.* 14*s.* 6*d.*; interest and commission to bankers, 17*l.* 3*s.* 10*d.*; and minimum rent (half-year to Michaelmas), 17*l.* 1*s.* 3*d.*; making a total of 1032*l.* 1*s.* 8*d.* On the other side there was a balance from last account, 141*l.* 6*s.* 1*d.*, by call of 3*s.* per share on 3926 shares made June 10 last; less discount allowed, 567*l.* 12*s.* 10*d.*; leaving a balance against the adventurers of 323*l.* 2*s.* 9*d.*

Capt. SOUTHEY (the manager) reported as follows: Since the last general meeting of the shareholders we have driven the 90 west nearly under the perpendicular of the lead gone down in the bottom of the 74, and I was in hopes we should have reached the ore ground in time for this meeting; but, unfortunately, the air got so bad the men could not possibly proceed any further with the drive before better ventilation was obtainable. Therefore, I took the staff of men from this end to put up a rise to communicate with the level above. We are now up about 3½ fms. from the 90, and with the same progress that we are now making we shall effect a communication in about six weeks from the present date, when we shall resume the drive west with all possible dispatch, and unless the shoot of lead alluded to is dipping west faster than it did in the upper levels we may naturally expect to meet with this course of mineral any day after the driving is resumed. The 64, west of shaft, has been re-timbered and driven 5 fms., and communicated with the stopes in the back of the 74. The air in this part of the mine was very foul (as alluded to in my report of June 8) before the end was holed to the stopes; since then we have had good ventilation, which enables the men to make better progress in stoping. The lode in the back of the 74 is much the same as when last reported on, varying in places from 6 to 12 cwt. of silver-lead per fathom.—64 Cross-cut South of Shaft: I am pleased to be in a position to state that we have succeeded, after a long struggle, in getting through the hard bar of ground, which has cost the company from 12*l.* to 15*l.* per fathom, so that more rapid progress may be looked forward to on intersecting the lode. I have



made a careful survey of all the ground at surface on the backs, and I consider we have about 70 fms. further to drive before falling in with the lode, which will take us about five months to accomplish. If we put in six men to keep it at day and night. At the same time I feel pretty certain, judging from the appearance of the ground in the shallower levels, that it will still get softer and more favourable for driving; and, if such should turn out to my expectations, the lode will be intersected all the sooner. It will be seen by the foregoing that a good deal of dead work has been accomplished, which brings us now on the eve of two very important points for the future of this property, provided we meet with the run of lead in the 90, west of shaft (and I may here say we have followed it down level after level more or less from surface), and the intersection of the lode in the south cross-cut, in the 84. Judging from the stratum of ground which we are passing through, I have great hopes and believe that profitable results will be realised from the points above named, and we shall be rewarded for the outlay which is being made. The dressing hands are busily engaged in preparing a parcel of silver-lead for the market.

The report was considered very satisfactory, although it was to be regretted that the air getting so bad prevented the 90 from being extended into the ore ground gone down in bottom of the 74.

It was resolved that the report be received and passed, and, together with the minutes of the meeting, be circulated amongst the shareholders.

A call of 4s. 6d. per share—2s. to liquidate the debit balance, and 2s. 6d. towards the current four months' working—payable in two instalments, was made, and a vote of thanks to the Chairman concluded the proceedings.

#### DRAKEWALLS TIN AND COPPER MINING COMPANY.

A general meeting of shareholders was held on Thursday, Oct. 14, at the Institution Rooms, Buchanan-street, Glasgow.

Mr. ALEXANDER PATTISON, on taking the chair, said: Before beginning the business of the meeting I think we may fairly congratulate ourselves on seeing such a very respectable number of shareholders present. I do not think that so great a number ever met on a previous occasion. You all know that by the lamented death of Mr. John Bell, your late Chairman, a vacancy has occurred in the directorship, and under these circumstances I have been asked to preside on this occasion.

The notice calling the meeting was then read, and the accounts and statements submitted.

Statement of Receipts and Expenditure from Feb. 20, 1879, to Sept. 28, 1880.	
Dr.—To balance from last account.....	£2475 18 10
Mine costs to Aug. 21.....	4229 12 5
Sept. 28—Interest on bank overdrafts, bills, charges on cheques, &c.....	197 9 11
General charges, travelling expenses, stationery, postage, and petty charges, &c.....	38 16 4
Law expenses.....	35 0 6
West of England Company—Balance due by them for arsenic considered irrecoverable, and now written off.....	45 19 0
Amount in last statement.....	£732 0 0
Amount recovered.....	32 1 0 = 45 19 0
Total.....	£7022 17 0

CR.—1879, April 4—R. R. Mitchell and Co., for tin ore.....	£33 7 2
May 30—ditto.....	32 8 6
Aug. 1—ditto.....	70 16 0
Oct. 11—ditto.....	90 13 4
1880, July 6—ditto.....	43 0 0
July 6—Thomas Greenfell, for arsenic ore.....	20 0 0 = £400 11 0
Sept. 28—Cash received to date:—	
Amount received of arrears of calls.....	261 0 0
Interest received.....	13 9 1 = 279 9 1
Balance.....	6342 16 11
Total.....	£7022 17 0

GENERAL BALANCE-SHEET.	
LIABILITIES—Sundry merchants on open account.....	£1510 18 11
Bills payable Vivian and Sons acceptances to them overdue.....	1000 0 0
Bills payable M. Bawden, "house property account".....	643 0 0
Sundry costs unpaid.....	73 16 0
Law expenses unpaid.....	35 0 6
Cash due Redruth and District Bank and purser, per Mr. Bawden's statement.....	3108 13 1 = £6371 13 6
Balance.....	£6342 16 11
ASSETS—Cash in secretary's hands.....	£ 27 10 9
Cash in Clydesdale Bank.....	1 5 10
Balance.....	6342 16 11 = £6371 13 6

CONTINGENT ASSETS.	
Calls in arrears and interest, as under.....	£2221 16 2
Bills receivable—Promissory notes held by company considered good—11412, 13s. 10s., less paid to account, &c., 80s.....	£1081 13 10
Ditto..... considered doubtful.....	1140 2 4 = £2221 16 2

**DIRECTORS' REPORT.**  
Your directors, in forwarding you a statement of accounts and balance-sheet, made up to Sept. 28, 1880, to be presented to the general meeting, to be held on the 14th inst., beg to report as follows:—

**ACCOUNTS.**—From the accounts it will be seen the balance against the company amounts to £6342. 16s. 11d., subject to deductions by recoveries to be made from calls in arrears.

**CALLS IN ARREARS.**—Your directors at previous meetings detailed the arrangements come to as regards the arrears of calls and the accounts show a further recovery of 279s. 9d. Your directors, whilst expecting to recover a considerable portion of the remaining arrears, regret that the circumstances of the parties in default are such that time must be given for advantageous recovery. They have, however, taken all steps which they consider prudent to procure speedy settlements.

**THE MINE.**—It had often been remarked among shareholders who took a special interest in the company that the mine had never been visited by any of their number with the view to informing themselves as to what really their property was, or like. The shares disposed of by the vendors had been taken up by gentlemen of whom scarcely any had knowledge of the mine except through what had been represented to them in Glasgow. Upon Mr. Bawden being appointed manager and purser he suggested an inspection by a deputation of the directors, but owing to the cessation of the operations, and the circumstances of the company generally, this was delayed from time to time. The resumption of work in driving the great adit by means of boring machines, and the approach of a time when tin might be successfully wrought at the mine, again brought before the directors the propriety of a visit to Drakewalls; and this was resolved upon before the lamented death of Mr. Bell, the late chairman.

Messrs. Trotter and Pattison, two of the directors, accordingly went to Tavistock, and spent June 28 and 29 in inspecting Drakewalls Mine, and in meetings with Mr. Bawden, and others interested in the mine. They were impressed with the magnitude of what the mine had certainly at some time been, as shown by the huge mounds or burrows of debris from the old workings heaped over a large area of surface. Even at the late comparatively low price of tin, it had been found profitable to select by hand and treat the better class of stones in the burrows; and if the price should rise it, of course, would be still more so. Mr. Bawden and Capt. Dunstan were busily engaged, with due regard to speed and economy, in getting the stamps and other machinery in order, repairing and retimbering the shafts, and generally preparing the surface, so as to lose no time in putting out tin and sending it to market so soon as work below could be resumed. The engines, which had cost a large sum, and were said to be of a superior character, seemed to have been carefully kept in order. The dwelling-house occupied by Capt. Dunstan appeared to be in good condition. The reservoirs were, however, not what they should be, and attention would require to be given to them as soon as the finances of the company will permit.

The adit was, of course, the great feature of the mine at the time. Its history will be told in the manager's and purser's report, but your deputation can speak to the interest, approaching to a sensation, which its success so far was creating at the mine and in the district. At the time of the visit it had been driven 224 fms. with the boring machinery in about 21 months. The water was pouring in a strong and steady stream down the hill side. The deputation met many gentlemen connected with the mines and mining interest in the district, and from all they could learn it appeared to be the general opinion that great success would attend the driving of the adit and the unwatering thereby of the mine, thus saving enormous pumping and other charges, and putting the company in a most advantageous position in the market.

**FINANCE.**—It will have been noticed under the head accounts that the balance against the company has been considerably increased. The sum stated includes the price of Capt. Dunstan's house (£6342) which has not yet been paid by the company, the bills granted being still in the hands of the bankers. The great bulk of the increased balance has arisen from the outlay connected with the driving of the deep adit level, and with the re-timbering the shafts and removing and re-erecting as water-stamps those previously driven by steam. At the last meeting of the company, held in April, 1879, the manager and purser was authorised to overdraw the bank account in Cornwall to the extent of 2000*l*. This was found to be considerably under what was absolutely necessary to ensure the completion of the great work of the adit, and consequently the overdraft has been exceeded with the sanction of the directors by about 1000*l*. But for this further expenditure the enormous outlay in the past would have been thrown away altogether through stoppage of the boring operations when their successful completion seemed so near at hand. It will be seen from the manager's and purser's report that the adit has now been so far successfully carried through without mishap as to have unwatered the mine to a considerable depth below the 20, which is 40 fms. from the surface. In consequence tin will now be drawn from this level, and the company, after a stoppage of three or four years, will once more take their place in a paying market as tin producers. So favourable a change in the position of matters is most gratifying in itself, and augurs a prosperous future for the company. It is of first importance in this view at once to put the finances of the company upon a sound footing. Through forfeitures and relinquishments of shares, but chiefly the former, the company now stands possessed of 2147 shares out of a total issue of 6500. The directors recommend that a portion of these shares should be realised by offering them at a certain price, in the first place to the shareholders, and thereafter, so far as not taken up, by placing them to the best advantage upon the market. They have made enquiries as to the probability of success in the latter event, and they believe that a fair price could be obtained. Another mode of raising money has been discussed by the directors—namely, by making a call, and thus reserving the unused shares, and minimising the capital upon which dividends would be payable, but they are of opinion that they are satisfied that the shareholders will prefer what has been recommended to themselves as the better course. In conclusion, the directors have pleasure in expressing their confidence in the local

management of the mine, and they have arranged for the presence of the manager and purser, Mr. Bawden, at the general meeting.

**MANAGER AND PURSER'S REPORT.**  
Drakewalls Mine, Oct. 14.—I have the pleasure to inform you that the work we decided on doing in 1879—to unwater the mine by driving the deep adit—has been successfully accomplished, and the water is now steadily draining from the old workings. When I last reported to you we had driven the adit a distance of 90 fathoms. Since then we have driven about 129 fms. more, and out the great cross-course, on which the 70 from the old workings was driven north; and we are now driving on the south side of the lode, and shall proceed almost at once to the bottom of the level to increase the draining of the old mine, in which the water is now down to within 5 fathoms of the 40. As the water has receded we have found the various shafts in a bad state of repair, and have gone to great trouble and expense in securing with timber Mathews' shaft, so as to make it our permanent drawing shaft. Near this shaft is situated our 27-in. cylinder winding-engine, which we are putting in thorough repair, and hope to complete it within a fortnight of this date. We shall then commence drawing the debris which has fallen, and to a great extent accumulated at the 20. After which we shall begin to draw tin stuff for our various water-stamps (four in number), carrying 45 heads. These will deal with a large quantity of tinstone during the coming winter with, we expect, profitable results. At surface, in addition to repairing the whim-engine, we are increasing the size of the reservoirs to a great extent, for the purpose of storing as much water as possible during the rainy season. It is remarkable that this mine, although being one of the oldest in Cornwall, is only 100 fathoms deep, and was for about a century worked as an open cutting, the lode being 60 ft. wide in many places. About 20 years since the then proprietors covered over the immense chasm some fathoms below the surface, and deposited the debris from dressing operations thereon. From a very early period in the history of this mine one great object of the successive companies has been to drain the water by means of a deep adit; and, but for the aid of rock-drills, no doubt we should have failed to accomplish this purpose, as many others have done before us. But having with the use of the drills a full supply of pure air, we have at a comparatively small cost accomplished one of the greatest pieces of mining work done for many years in this part of Cornwall at least. The editor of the Tavistock Gazette, after visiting the mine on July 7, 1879, in speaking of the rock-drill at work says—"A few days ago we had the gratification of seeing one of these boring-machines doing its work underground at Drakewalls Mine. As everyone knows, this mine is a very ancient concern, having been worked chiefly for tin with more or less success for centuries." Dr. Foster, the then Government Inspector of this district, in writing me unofficially on June 16, 1880, says—"I think you have displayed more pluck and faith than some managers who give contracts to outsiders instead of at once boldly recognising the fact that every mine of importance ought to possess and look after its own boring plant just as much as its own pumping and winding machinery."

In conclusion, I would also remind the shareholders that the deep adit has been driven the whole distance by the side of a large copper lode, from which a considerable quantity of copper ore was returned from the 70 by the old company. In our drive we have proved the lode in two places to be highly mineralised, containing yellow and black copper ore and sulphur mounds—altogether a fine looking lode about 12 ft. wide. As soon as a level has been driven to communicate with the old mine, so as to properly ventilate the workings, there can be no doubt but that many points in this drive will be profitably worked. I can only again repeat that I consider we have a good property, and one that will prove of great value to the shareholders.—MOSES BAWDEN, Manager and Purser.

The CHAIRMAN, in moving the adoption of the directors' report, said the directors in the special circumstances of the company have thought fit to accompany their report with a more than ordinarily extended statement of the position of the company. They have also accompanied their report with one by Mr. Moses Bawden, the manager and purser of the mine. There are two matters of special interest in the directors' report, the first being the state of the mine itself, and the second, of equal importance, being the position of the company's finances. In regard to the state of the mine, that being a matter of practical skill, I leave Mr. Bawden to satisfy you. The company have had a weary time waiting for what seemed never coming, but now the time of prosperity appears to be drawing upon the company, and they feel certainly most hopeful as to the future. (Applause.) The shareholders will notice that some time ago it was proposed that the directors should go to the mine and see what really their property was and was like, and the late Mr. Bell and myself accordingly agreed to visit the mine, but unfortunately the old proverb that "Where man proposes, God disposes" interfered, and Mr. Bell's death prevented the carrying out of the resolution of the committee. My co-director, Mr. Trotter, from whom I have just received a telegram stating his inability through illness to be present, and myself were afterwards asked to go South. Of course, we could not carry with us the skilled eyes of mining experts, and all the report we could bring back with us was no more than that what any of you might have done perhaps better. We have embodied what we have to say under the article "mine" in the directors' report. The driving of the adit was the matter of sensation at the time we visited the mine. Twenty-one long months had been spent in driving this adit, and no saying how many more would have been spent without completing the work but for the employment of rock-drills. I believe that but for the use of this effective machinery the great work in hand might really never have been accomplished at all. We found the water flowing in steady strong stream from the adit down the hillside, and the work, though undoubtedly of a most perilous nature, had been conducted so far with so much care and caution that not a single mishap had occurred during the operation either to life or property. (Applause.) I now come to the matter of finance, and, of course, have to say frankly that the company has to look in the face the very serious balance of not less than £6342. 16s. 11d., as stated in the report. A very great proportion of this extra expenditure—in fact, more than the whole of it—has been incurred in the cost of the adit operations, about 3000*l*. having been so spent; 1000*l*. has also been paid away to put the mine in good working order, and generally in repairing and rearranging the machinery, &c., on the surface. I have no doubt that upon any shareholder putting questions to Mr. Bawden relative to expenditure he will be able to give all satisfactory explanations upon the details of the costs. I may explain that the monthly expenses have been increasing as the adit approached completion in consequence of the necessity of putting the machinery in good order, so as to commence working as soon as practicable. I must also point out as a counter-balancing feature that as in the case of all mines conducted on the Cost-Book Principle, the value of the property and the general assets of the company do not appear on the credit side of the accounts. No value whatever is put upon the mine, lands, houses, or machinery. The company have a very valuable property, and were this statement prepared on the principle of statements in use in limited liability companies it would appear to very much more advantage than it does. Under the head contingent assets it will be seen that there is more than 2000*l*. of cash still in the hands of the shareholders, and that the balance is fairly good, and there is a good prospect of their ultimate recovery. Proceedings have been taken in the High Court of Justice in London against the defaulters, and the company holds judgments which may be put in force if necessary when it is prudent. Perhaps little value can be put upon the remaining half of the arrears. It thus appears that there is a present indebtedness of about 30s. per share, and you have now to solve the problem how this debt is to be met. The original shares were 6500 in number, and through forfeitures and relinquishments, but chiefly the former, 2147 of these shares are now the property of the company, leaving 4353 shares in the hands of the shareholders. In the possession of these forfeited shares they have a considerable available fund of credit or means of raising money. The matter for the consideration of the shareholders to-day is whether these shares, now the property of the company, are to be converted into money, either by being first offered to the present shareholders, or by being placed upon the public market, or alternatively the debt is to be met by making a call? The directors have carefully considered this matter in the interests of the shareholders, and they now advise that the best course that the shares should be realised. There are two things to be considered as to the price to be asked—the first being the intrinsic value of the shares, and the second the figure which would prove attractive in inducing either shareholders or the public to invest. In regard to the first it is a very difficult thing indeed to get or give a reliable opinion. Mr. Bawden is perhaps the best judge upon the point, for really we gentlemen in Glasgow have only one means of deciding the value of the shares here, and that is what people here would be willing to give, and what they would really work. They know it is very difficult to get people to buy into a company like the Drakewalls with such a heavy existing debt. We have thought that a fixed value of 2*l*. a share would prove both a fairly intrinsic and fairly attractive price to the present shareholders at which to offer the shares, but our minds are not decided in the matter. It has been urged, on the other hand, that 3*l*. should be got. So far as my own individual opinion is concerned I think an offer at 2*l*. would be more advantageous as attracting present shareholders. It is plainly for their interest to invest, for after having spent so no profitable purpose as yet such a very large sum it would be foolish indeed to stop when to all appearance we are on the point of a great success. As to the suggestion of meeting the debt by a call I think it would be a great pity in this way to aggravate your feelings further after having suffered so much already; and altogether, therefore, they recommend that you should equalise your cost by investing further to the best of your ability at 2*l*. a share: 2*l*. will not necessarily be sufficient to clear off the whole debt of the mine, but that is immaterial, because they expect to be shortly putting tin into the market, and in that way they will be meeting costs, and by not asking a dividend for a little time we will be able to wipe off any balance. We believe, certainly, at any rate, that the present debt will not be increased, so that by providing for it now we will have nothing to be anxious about for the future. (Applause.) I shall be glad before putting the resolution to the meeting to hear any remarks or questions from shareholders.

After some conversation the report and statement were put and passed, subject to the certificate of the auditor.

Mr. MOSES BAWDEN (the manager and purser), in submitting his report, said—It will be within the recollection of some of the gentlemen in the room that about three years since he came to Glasgow single-handed, and stated then that he thought it would be a great pity to abandon the property, as two or three shareholders who attended the meeting wished to do. He believed, however, that before they left the meeting they had altered their opinion, and placed a certain amount of confidence in him, although then unknown to them, and he trusted that he had not since lost that confidence, and he thought that they would soon place themselves in such a position as to regain the full confidence of the mining people in Glasgow. Mr. Bawden then drew attention to the first clause in the report—"that he was much pleased that they had been able to drive the deep adit, and

thereby to unwater the mine." He then explained what had been done, pointing out on the plan of the workings the direction of the adit and its relative position to the old mine, stating that the draining of Drakewalls by means of the adit was an accomplished fact, and that he had no doubt in a very short time of commencing the drainage the estimated cost was 200*l*. per month; but at the time of present would look at the accounts from the time of commencement up to May 29 inclusive, being the date they had tapped the water, and he would see that the average outlay had been 197*l*. 3s. 6d. per month. The Chairman had referred to the last cost in the statement of accounts; but he wished to state that about 3000*l*. of the 6000*l*. old against the company was transferred to him from the old parties, so that only about 3000*l*. had been spent since tin is selling at a good price they could take away a large quantity of low-class tin, and work the better ground. They had been trying to walk, and if they came that in a very short time they would be able to run alone; at all events, he did not think they would require to call on the shareholders for assistance to work Drakewalls in future.

Mr. WILLIAM MATHEWS, the company's engineer, in submitting his report said he had but few remarks to make with respect to the report on the machinery. He had come to the conclusion that Drakewalls would in future require no calls from the shareholders, as he believed that there was almost an unlimited quantity of lodestuff, containing about 28 lbs. of tin to a ton, and he considered the water stamps alone should produce about 7*l*. tons of tin per month, and the small expense in bringing up the stuff would leave a considerable profit in proportion to the cost incurred. He had every faith in the mine, and hoped some means would be adopted to liquidate the present debt, as investors had not like buying into a property with such a large debt hanging over them. Had he studied his own interests when he last attended a meeting in Glasgow, instead of persuading the shareholders at that time to continue the mine, he should have advised them to stop it, and he should have gone into it had the company given it up, and thereby have derived considerable pecuniary advantage.

**REPORT BY MR. WILLIAM MATHEWS (COMPANY'S ENGINEER).**  
Tavistock, Oct. 8.—I beg to hand you my report on the machinery at this mine. The 50-in. pumping-engine with the two boilers, you are aware, have not been at work for some time. The engine is in good repair, but for some time required would want some repairs. There is attached to this engine about 100 fms. pumps and the necessary gear. The 40-in. steam-engine with two boilers are in very good condition, and can be set to work at any time when required. There are attached to this engine 56 heads of stamps and the necessary dressing machinery, all in good repair. These stamps are capable of pulverising 60 tons of lodestuff per day. The 27-in. cylinder winding-engine has been thoroughly repaired, and will be set to work in the coming week. By making these repairs considerable economy will be effected in fuel in driving the stuff to surface. The 45-ft. water-wheel (known as the winding-wheel) is in good repair, and we have removed 12 heads of stamps from the south side of the 40-in. engine, and driven by this wheel. The 30-ft. water-wheel, driving 12 heads of stamps, and the 18-ft. wheel, also driving 8 heads, are in fair working condition. The 45-ft. wheel, formerly used for pumping, is put to drive 12 heads of stamps (also removed from 40-in. pumping engine), is in good repair, and working satisfactorily. Together, these wheels are driving 44 heads of stamps. In the six winter months these would pulverise about 25 tons to 30 tons per day. Should the surface water fall short in summer the steam-pumps can be put to work if required. There is also an engine and boiler, with air-compressor and winding-gear attached, at the mouth of the deep adit, which were erected about two years since for driving the rock-drills in said adit; this machine with the three rock-drills are still working satisfactorily. From my long connection and knowledge of this property I consider the prospects of the shareholders were never so cheering as at present, and I certainly look forward to profitable results from the working of this mine.—WILLIAM MATHEWS.

A SHAREHOLDER asked to what depth the mine had been drained?—Mr. BAWDEN said it was within 8 fms. of the 40 on Oct. 8, and was draining quite fast enough for practical purposes, as they would work at the 20 for some considerable time, pointing out on the plan what was intended to be done.

A SHAREHOLDER asked what the cost of production would be per ton? They knew the selling price, and if they knew what it would likely cost to produce, they would know the profits for one year.

Mr. BAWDEN said that was a question he had hitherto declined to answer precisely. He had always considered they could return tin at Drakewalls at a cost of 30*l*. to 35*l*. per ton, but he should not like to give exact figures until he had further proved what could be done. He did not think they could work at a loss, and if the water failed he should not hesitate in starting the steam stamps.

A SHAREHOLDER asked how the leases stood?—Mr. BAWDEN said they had a lease for 21 years, about 7 of which had expired. There would be no difficulty about leases. He thought they were indebted very much to the Duchy of Cornwall for the considerable and liberal way they had treated the company, remitting the full rents and dues for a long period, but he had no doubt that it would ultimately prove a good thing for the Duchy.

The third resolution was then put and carried.

The CHAIRMAN said it now remained for the shareholders to resolve as to the realisation of the 2147 shares on hand. He need not repeat what he had already said, but if no one had any resolution to the contrary effect, he was now prepared to move the resolution that the committee and purser and manager be and are hereby empowered to invite applications for the shares in the hands of the company at the sum of 2*l*. per share, and if they were taken up to be lodged at the company's offices in Glasgow, 73, Renfield-street.

A SHAREHOLDER asked were the shares to be offered to the shareholders in proportion to the amount that they held?—Mr. ANDERSON apprehended that what they would do would be to invite applications and let the directors see what applications came in. They might be all applied for, in which case the directors would adopt some reasonable and equitable mode of allotting the shares. He was very glad to see the sum fixed at 2*l*. He thought the price applied to a great many shareholders to take up applications, and if they were taken up by them he would look very hopefully for the future prosperity of the company.

A SHAREHOLDER said there was the other course to consider—to make up their minds to lie out of all dividends and go on with present capital.

The CHAIRMAN said he believed they were all desirous of getting rid of the incubus of debt, as they were getting into a new era, and wanted to start untrammelled by such a burden.

Mr. MATTHEW ANDERSON advised the present shareholders to take up the shares to be disposed of.

Mr. PATTISON asked approval of the meeting to the appointment of the new board of directors, and it was resolved that Sir James Bain, Messrs. J. H. Collins, Robert Trotter, Alexander Pattison, Robert King, and William Mathews be appointed the committee of management.

A vote of thanks to the Chairman concluded the meeting.

#### WEST PRUSSIAN MINING COMPANY.

The following report of the directors will be read at the meeting on Wednesday:—

In submitting to the shareholders the balance-sheet and profit and loss account for the year ending June 30, it gives the directors satisfaction to be able to report that the profit on the year's working is considerably in excess of that of the previous year. Although, owing to the local disturbance on the 32 at Englebert, the output at that mine has been much smaller than formerly, the production of the mines that have been in work is quite equal to that of the preceding year, the average price of lead ore having at the same time improved, and the cost of production diminished.

The directors have succeeded in acquiring the lead mine Aurora, adjacent to the company's property, on exceptionally favourable terms. In consequence of the late severe depression in the lead trade the mine became insolvent, and having passed into the hands of the principal creditors, the directors were able in January last to purchase it for the sum of 2750*l*., and they are of opinion that it will prove a valuable acquisition to the company. The report of the manager gives a description of this mine and of the various works carried out during the year on the company's property.

The profits for the past year, including 2034*l*. 19s. 3d. brought forward from last account, are 13,485*l*. 8s. 7d.; of this sum 4390*l*. has been paid to the preference shareholders by way of dividend, and 4205*l*. to the A shareholders. The directors propose that the balance be appropriated in the following manner:—That 2000*l*. be added to the sinking fund, that the reserve fund be increased to next account. The addition of 1000*l*., and that 1895*l*. 8s. 7d. be carried forward to next account. The sinking fund would thus be raised to 4000*l*., and the directors propose that this sum be applied in reduction of development of mines account.

The temporary interruption to the raising of ore at Heideberg, caused by the inflow of water referred to in the manager's report, and the recent decline in the price of lead, render necessary the suspension of the usual dividend upon the A shares for the past quarter.

The directors who retire this year are Messrs. Brinsley Nixon and James R. Stewart, jun., who, being duly qualified, offer themselves for re-election. Mr. Woodington, the auditor, also retires, and offers himself for re-election.

[For remainder of Meetings, see to-day's Journal.]

**MOUNT CARBIS.**—We are informed that a very important discovery has been made in this mine in driving the 27 east, the lode having improved to a value of 50*l*. per fathom; this discovery in such a richly productive district is a matter of the first importance. We congratulate Capt. Tregay on his good result, and wish him all his well-deserved success. We are also informed that a pumping-engine has been purchased for this mine, and is to be erected forthwith.

**EPPE'S COCOA—GRATEFUL AND COMFORTING.**—By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Eppe has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up from a weak and flaccid state to one of strength and vigour. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a danger by keeping ourselves well fortified with pure blood and a properly nourished system. *—Circular Service Gazette.*—Sold only in packets labelled—"JAMES EPPE'S COCOA, HOMEOPATHIC COGNAC, LONDON."—Also makers of Eppe's CHOCOLATE for afternoon use.



## Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. CLXIV.\*

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,

Mining Engineer, Wakefield.

(Formerly Student at the Royal Bergakademie, Clausthal.)

[The Author reserves the right of reproduction.]

## VENTILATING MACHINES.

These may be divided into two classes—those by which the air is forced into the pit, and those by means of which the air is exhausted from the pit; and they may be distinguished as air compressing ventilators and exhaust ventilators.

If the ventilating machine is placed at or in connection with the mouth of the upcast shaft, then the air is drawn out of the shaft and forced into the atmosphere, fresh portions of air from the mine rushing into the shaft to supply the place of that exhausted, and the machine is said to be an exhaust ventilator. On the other hand, if the machine draws in air from the surface, and forces it down the downcast shaft, it is said to be a compressor ventilator.

If in such a case a very sensitive barometer be carried along the course of the air current thus produced the readings will show a slight gradual fall all the way from the downcast to the upcast shaft. If the air is forced into the mine by a compressor ventilator the ventilating current issues from the upcast shaft at the surface barometric pressure, which on the readings of a water gauge corresponds to zero; so that the reading of the barometer in the downcast shaft would be higher than the barometric reading at the surface, and the water gauge reading would show a height above zero. The compressor ventilator, therefore, would have to raise the pressure of the air to a height as given by the water gauge above the surface atmospheric pressure. If, on the other hand, an exhaust ventilator is placed at the mouth of the upcast shaft the air enters the downcast shaft at the atmospheric pressure, so that the water gauge reading would be zero. The pressure, however, gradually diminishes towards the upcast shaft, where the water gauge reading shows a pressure less than zero; and thence the exhaust ventilator has to raise the pressure from minus to zero, or by a height measured by the water gauge. The only work, then, theoretically required of the ventilator is to raise the pressure according to the water gauge, and to drive forward the air. This value is independent of the construction of the machine, and with a given amount of air the work theoretically required is also independent of the construction of the ventilator.

Suppose the ventilator to consist of a cylinder which is open below to the atmosphere, and is provided in the top cover with two (an inlet and an exhaust) valves. During the down stroke air enters above the piston by means of the inlet valve, the outlet valve remains closed, whilst during the upstroke the reverse occurs. If the ventilator acts as a compressor ventilator, the reading of a water gauge connected with the inlet pipe would be zero, and in the delivery pipe (say) 1.5 ins. During the down stroke the pressure of the air remains the same on both sides of the piston, and the machine has only what may be called necessary resistance to overcome. When the stroke is reversed the air above the piston must first be compressed, so that the water gauge reading rises from zero to 1.5 ins., and first then the valves open, and the air is driven out of the cylinder, the water gauge reading remaining the same to the completion of the stroke. Since in mines the difference in the pressure of the air required for the ventilation, and which we have in the present case denominated 1.5 ins., is very small compared with either of the barometric readings, the distance required to be traversed by the piston to raise the pressure by 1.5 ins., is but a very small fraction of the whole stroke, and the reading of the water gauge attached to the cylinder may be practically taken as 1.5 ins., during the whole of the stroke. Suppose, for example, that the atmospheric pressure is 30 ins. of the mercury column, equal to about 400 ins. of a water column, and that the water gauge reading is 2 ins., then the piston would have to move about 2.400ths, or 1.200ths, of the stroke to compress the air so as to give a water gauge reading of 2 ins. This fraction of the stroke is so small that we may practically assume that the water gauge reading is the same over the whole of the stroke. Since the pressure of the air above the piston exceeds that beneath by + 1.5 ins., as measured by the water gauge, it may be assumed that the result is the same as if a layer 1.5 ins. deep rested upon the piston, and that this is raised through a space equal to the length of the stroke. The work then requisite to raise the piston would be found by multiplying together the area of the piston in inches, the height in inches, the weight of 1 in. cubic of water in pounds, and the stroke in feet, the result being expressed in foot pounds. Since the pressure on both sides of the piston during the down stroke is the same, no work is required during the down stroke, and the above expression represents what may be called the "real effect" of the ventilator during a complete up and down stroke, in contradistinction to the actual work, which includes that necessary to overcome frictional and other resistances.

If the machine works as an exhaust ventilator the pressure is the same on both sides of the piston during the up stroke, but during the down stroke less on the upper than the under side of the piston, and the expression for the work in this case is the same as that given for a compressor ventilator, except that — 1.5 ins. replaces + 1.5 ins. Since a considerable power is required to overcome the necessary resistances, the power required to drive the ventilator will be much greater than that expressed by the "real effect" of the ventilator. To obtain this power the above expression of the "real effect" of the ventilator must be divided by the fraction representing the efficiency of the ventilator.

The air current on leaving the upcast shaft, or the exhaust ventilator, emerges into the air with a greater or less velocity, and on this account a certain amount of power is lost, and the value given as 1.5 ins. and — 1.5 ins. should be as much greater as corresponds to the velocity of exit. The increased value of the water gauge reading will also give an increase in the "real effect," and in the actual power required for driving the ventilator. The increase required is, however, comparatively small, and may be lessened at will by decreasing the velocity of exit, and increasing the section for the outlet.

Theoretically the "real effect" required for a given amount of ventilation is less with the compressor ventilators than with exhaust ventilators, and consequently the power required to drive the former is less than that required to drive the latter. This will be evident from the following considerations. The gradual increase in the height of the barometer from the mouth of the upcast to the mouth of the downcast, and which forms the principal part of the value of the water gauge reading, is due entirely to friction, which increases in the square of the velocity. When the ventilator is a compressor the height of the air current is greater, and consequently for a given velocity of air passing through the mine the volume, and also the velocity, and the tension dependent on the velocity is less. Since, however, the difference of the tension of the air in the mine in the two cases is very small compared with the actual or average tensions of the atmosphere, the above difference in velocity is very small, and the advantage in favour of compressor ventilators is not sufficiently great to have the least practical bearing on the choice of the two methods (compressory or exhaust ventilators).

The following practical considerations favour, however, the use of exhaust ventilators for mines in preference to compressor ventilators. 1.—The loss of power, especially the leakage of air, is much greater in the case of compressor than exhaust ventilators, and with the best mechanical arrangements much more difficult to avoid in the case of the former.

2.—Ventilating machines placed at the mouth of the shaft, exhaust, or compressor, render the shaft useless for other purposes, such as travelling, winding, and pumping, unless special arrangements are made for boxing up the shaft. In the case of an exhaust ventilator the downcast shaft, which is healthiest and most convenient for the miner, is left free.

3.—Being taken on a course of lectures on Mining, delivered by Herr Bergstrasser, Director of the Royal Bergakademie, Clausthal, the Harz Mountains, Germany.

\* Von Hauer Ventilations Maschine der Bergwerke.

nient, can be fitted up as a winding shaft, without any special arrangements for boxing up the mouth of the shaft; and although it would be possible to place a compressor ventilator in connection with the downcast shaft, and to use the shaft for winding, a greater leakage of air would result in the boxing up arrangements for closing the shaft than in the case of an exhaust ventilator placed in connection with an upcast shaft, and used at the same time as a winding shaft.

It is sometimes urged as an argument in favour of compressor ventilators that as they cause a greater tension in the mine the exudation of gas from the pores of the coal is diminished. Since, however, the extra pressure in most cases in the workings would not on this account exceed 2 ins., measured on the water gauge, or about 0.14 in. of the mercury column, this extra tension is so small, compared with the average barometric reading of about 29 ins., that it cannot be considered as of any practical influence; and it is even less than the daily change which often takes place.

3.—Exhaust ventilators, especially the centrifugal ventilators, can be constructed much simpler than compressor ventilators, and are besides less liable to break down or require repairs, both of which are of paramount importance in ventilators for large mines. Small compressor ventilators, however, are extremely useful for ventilating single places.

Exhaust ventilators may be classified as those which have a reciprocating motion, and those which have a rotary motion. The first class may be again subdivided into piston ventilators and bell ventilators, and the second class into centrifugal, screw, and rotary ventilators (corresponding in their action to rotary pumps), as distinguished from centrifugal ventilators.

In the case of ventilators which have a reciprocating motion, even where they are double acting, an annoying pulsation is felt at the end of every stroke, and to avoid this such ventilators when used are put down in couples.

**PISTON VENTILATORS.**—The simplest of these is the so-called ventilating box, which is usually square in section. It consists of a wooden box placed vertically, in which works a wooden piston. One end of the box is open, sometimes the upper and sometimes the lower. The box is formed of staves well planed and held together by means of straps and bolts. The inside of the box, against which the wooden piston works, is lined with ash or alder wood. The delivery valve or valves is usually placed in the closed end of the box, and the suction or inlet valves in the piston, since the apparatus is generally employed as a compressor ventilator. When used as an exhaust ventilator the inlet valve will be placed in the closed end of the box, and the outlet valve in the piston. The piston generally has two rectangular valve openings, which are closed by an hinged valve of wood or iron. To make the valve close tight the valve seat is covered with strips of sheepskin. In order to make the piston work tight it is provided with a groove, in which four carefully planed laths of wood fit, these laths being pressed against the inside of the box by springs placed behind them in the bottom of the groove. The ventilating box, as will be at once supposed, is intended only for use in ventilating single levels, and not the whole of a mine. They are generally moved by hand or water power. In Gerstner's arrangement a friction wheel is centred on the end of the piston rod. The movement of the end of the piston is kept in a vertical direction by means of a parallel motion with equal links. The piston is moved up and down by means of a large cam wheel on a driving shaft, which works against the friction roller on the end of the piston rod.

A better arrangement for mining purposes, in which the apparatus is used as an exhaust ventilator, is described by Von Hauer. The ventilating box consists of a rectangular box, placed vertically about 10 in. square. The bottom end is closed, whilst the upper end is open. The inlet pipe opens into the closed bottom end of the box, the opening for which is closed by a hinged valve opening upwards. The piston consists of a similar box, closed at the lower end, and open at the upper, which fits very closely the inside of the first box. The closed end of this piston-box has an opening in it, covered by an hinged valve opening upwards. The piston is made to work tight by means of a strip of leather nailed to the upper edge of the ventilating box, and which projects inwards so as to bear against the outside of the piston-box. The advantage of this arrangement is that the packing can always be seen and got at for renewing and repairing without interfering with any other part of the apparatus. A hooped handle is fixed to the upper part of the piston-box, by means of which it can be moved up and down. Such an apparatus could easily be arranged to be moved from the pump-rods. When the apparatus is worked by hand it is usual to place it in an inclined position.

## FOREIGN MINES.

**ST. JOHN DEL REY MINING COMPANY (Limited).**—Advices received Oct. 2, 1880, per Trent (S.), dated Morro Velho, Sept. 2, 1880:—

**GENERAL OPERATIONS.**—The produce for the second division of August, a period of nine days, amounts to 5963.4 oits., equal to 687.4829 ozs. troy. It has been derived as follows:—

	Oits.	Tons.	Oits. per ton.
General mineral	3,731.1	from 891	= 4.187
Mineral free from killas	2,016.3	315	= 6.401
	5,747.4	1206	= 4.765

Re-treatment—  
Arrastras Morro Velho ..... 216.0 .. = 0.179

Total ..... 5,963.4 .. 1206 = 4.944

This low return is due to the same causes as previously reported, and to the rapidly declining quantity of water, now estimated at 1160 cubic ft.

**MINE: Return of duty for 13 working days:—**

	Oits.	Tons.	Oits. per ton.
Mineral raised from the mine	1713		
Mineral quarried per borer per diem	112		
Average attendance of borers daily	116.77		
Average attendance of natives daily	251.61		
Sinking shaft vertically	2 ft. 10 in.		
Width of pure and mixed mineral, inclusive of Eastern slope	43	0	
First slope, west from sump	32	0	
Pure mineral contents	21	0	
B shaft, vertically—			
Still remaining to be sunk for completion of permanent work	9	0	
Driving cross-cut south, Section 277 D	17	10	
(Nature of ground, unmineralised killas.)			
Cross-cut north, Section 278 D	13	0	
(Nature of ground, pure and mixed mineral of medium grade.)			
Rainfall for August	Nil.		

Advices received on Oct. 15, 1880, per Neva, dated Morro Velho, Sept. 18, 1880:—

**GENERAL OPERATIONS.**—These have been carried on during the month with but few interruptions, and fair duty has been performed, but owing to the limited supply of water, a large proportion of which is required for the pumping-wheel, the hauling power was much diminished, consequently the supply of ore, and the produce therefrom, are considerably below those of the preceding month. Moreover, a large force has been employed on exploratory works in the mine; and, owing to the difficulty of separation, the unproductive mineral derived therefrom was treated with the "general mineral."

**GOLD PRODUCE FOR AUGUST.**—The gold obtained during this period amounts to 21,614.6 oits., equal to 2500.5618 ozs. troy. It has been derived as follows:—

	Oits.	Tons.	Oits. per ton.
General mineral	12,651.2	from 2753	= 4.599
Mineral free from killas	7,515.2	1045	= 7.191
	20,176.4	3798	= 5.312

Re-treatment ..... 1,514.1 .. = 0.399

Total ..... 21,690.5 .. 3798 = 5.711

The reasons for such a low return have been already given. It will be observed that the yield per ton is a trifle better than that of the preceding month, though the assay value of the ore was somewhat lower. The increased yield is, therefore, due to a better recovery in the first process, the return from arrastras being correspondingly less.

**PERMANENT HAULING MACHINERY.**—A large force has been employed on this important work throughout the month, and fair progress has been made both at surface and underground.

**COST AND PROFIT.**

Produce for August ... 21,614.6 oits., at 7s. 9d. per oit. = £8375 13 13/4

Cost ..... 7338 0 9 3/4

Profit for the month ..... £ 1037 12 4

The cost in currency is less than that of the preceding month by Rs10,500.000, but in consequence of a rise of 1d. in the rate of exchange the difference in sterling is only about 600l.

**MINE.**—Mineral raised from the mine ..... 3584 tons

Mineral quarried per borer per diem ..... 1.22 "

Average number of borers daily ..... 113

Average number of natives daily ..... 245.54

**EASTERN AND WESTERN SECTIONS.**—There is no change to report in the condition or appearance of the lode at any of the points of operation.

**CROSS-CUT SOUTH.**—This driving has been extended 17 ft. 10 in., the end being still in pure killas.

**CROSS-CUT NORTH** has been driven 13 ft., the forebreast being 9 ft. wide, half of which is mineral of a fairly auriferous quality.

The **EASTERN LEVEL** has been extended 10 ft. 9 in.; the width of pure mineral in the forebreast being about 4 ft.

**CUAIABA—GOLD PRODUCE FOR THE MONTH OF AUGUST.**—773 oits., from 343 tons, equal to 2.253 oits. per ton.

Produce as above ..... 773 oits. at 8s. 1d. per oit. = £312 8 5

Cost (inclusive of deep adit and surface work) ..... 914 18 11

Expenditure on capital account in excess of produce, £802 10 6

In addition to the above there has been a special expenditure of 2311.7 os. 8d. on account of the permanent machinery.

It will be seen from Mr. Dale's report that the various works both in the mine and at surface have been carried on vigorously during the month. A sketch of ground excavated during the past three months is forwarded in the document box.

**DEEP ADIT.**—The work of driving was suspended throughout the month for the purpose of making preparations for starting the rock-drills.

**GOLD EXTRACTED TO DATE.**—The produce for the first division of September (a period of 11 days) amounts to 6518.8 oits., equal to 752.3414 ozs. troy. It has been derived as follows:—

	Oits.	Tons.	Oits. per ton.
General mineral	3,394.6	from 700	= 4.849
Mineral free from killas	2,596.3	420	= 6.182
	5,990.9	1120	= 5.349
Re-treatment	527.9	—	= 0.470
Total	6,518.8	1120	= 5.819

The prolonged drought is greatly interfering with the output, the supply of water for the hauling-wheel daily becoming less. In order to obtain an increased quantity of mineral for the stamping-mills, the old Bahu level has been cleared and relaid, and about 30 wagons of stone is being quarried daily from the "Bar."

**MINE.**—Return of duty for 13 working days:—

	Oits.	Tons.	Oits. per ton.
Mineral raised from the mine	1649		
Mineral quarried per borer per diem	1.13		
Average attendance of borers daily	112.46		
Average attendance of natives daily	234.39		

No change in either eastern or western section of the mine to advise.

At Cuaiaba on the 9th inst. a Cranston drill was started in the deep adit, and since that date driving has been carried on steadily day and night, the progress made being very satisfactory.

The gold troop taking four boxes of bar gold, weighing in all 20,836.5 oits., equal to 2402.1094 ozs. troy, was dispatched for Rio and England on the 16th inst.

**N.B.**—The gold has duly arrived.

Telegrams received:—On Sept. 23, dated Rio, the 23rd—"Produce, 11 days (first division of September), 6500 oits. Yield, 5.8 oits. per ton. Profit for the month of August, 1000l. All going on well."

On Sept. 29—"Produce, nine days (second division of September), 4000 oits. Yield, 4.4 oits. per ton."

On Oct. 12, dated Rio the 11th—"Produce for the month of September, 17,000 oits. Yield, 5.2 oits. per ton.—Cuaiaba: Stamped in September 340 tons. Yield, 2.4 oits. per ton."

**RUBY AND DUNDERBERG CONSOLIDATED.**—Report on above mines for week ending Sept. 26:—The main shaft has been sunk 15 ft. during the week; total, 110 ft. below the station. We are now engaged in putting in the station timbers preparatory to starting the 600 ft. level, which will be commenced immediately before cutting out the station or timbering the shaft, and which can be done after the 600 has advanced far enough to admit of work being done at both places at the same time. The winze at the north end of the ore body has been sunk 16 ft. to total depth 46 ft. As stated in my last the ore body is pitching to the north, consequently we have very little ore at the bottom of the winze at present. The winze at the south slopes is about the same as per last report. The south-westerly drift commenced last week has advanced 27 ft. At the winze at the end of the south drift nothing done as far as sinking is concerned, but we have drifted 12 ft. in good ore fully 6 ft. wide. The slopes above the 400 continue to improve; producing a little good ore. The cross-cut from the 400 south drift is still in very hard ground; advanced 4 feet—only two men at work on it. The 300 west cross-cut has advanced 6 ft. this week; total, 243 feet—only two men working at this place. The rise above the 300 has advanced 6 ft.; total above 300, 79 feet—ore 6 ft. wide, and continues to improve. We have shipped 60 tons of ore this week, and have 42 men at work, and six men as tributers.

Telegram received from Eureka, Oct. 19:—The second-class ore melted during the week was 13 tons, and realised net about \$26 per ton. The quantity of ore extracted during the week was 53 tons.

The first-class ore is now being elucked for the company's own furnace, which will probably be started early next month. This is in accordance with the commendation and expressed intention of the superintendent, as per advice received by the board to-day.

**COLORADO UNITED.**—Oct. 20: Advice from the mine state that the overdue accounts, which show a nice profit per month, are nearly ready to be forwarded to London. The profit for August is about \$6000, and there is every reason to expect the results of September will be as good, or better. The dressing works are running well, and the ore is well up to the average. Everything is in good order at the mine, not a dollar being wasted. The accounts will be forwarded as soon as Mr. Hamill, who is absent and unwell, has gone through and approved them.

**PITANGUI (Gold).**—Mr. T. S. Treloar, Pitangui, Sept. 17: The produce obtained for the month of August, from 268 tons of ordinary mineral and 1 ton 12 cwt. of vein stuff, or in all 269 tons 12 cwt. partly treated, amounted to 1687 oits. of gold, which, valued at 8s. 6d. per oit., equals the sum of 708l. 9s. 6d.; and the estimated cost for the same month at exchange 23d. (exclusive of 281l. 12s. 3d. expended on capital account, in respect of the new stamping mill, house for officers, charcoal house, &c.), amounted to 685l. 3s. 7d.; leaving an estimated profit for the month of 23l. 5s. 11d. Mr. Treloar remarks that the above figures are very disappointing, and, according to present indications, the results for September month would be more so. An improvement, however, in the Ouro Podre vein might take place at any time, and a good discovery be made in the Bahu section. Mr. Treloar stated, under date of Sept. 2, "At the date of my last letter, the Ouro Podre vein was very rich, and the features of the ground led us to expect that the bunch would be of some duration, but we had not sunk beyond 8 ft. In it when a mass of ironstone again appeared, completely disconcerting and disappointing us to such an extent as to render the stuff from it almost worthless for treatment; and although we have since sunk nearly 2 fms. more on it there is no improvement. We hope, however, on getting through this bunch of iron to find, as on previous occasions, a good deposit of gold under it, and the next may prove richer than the preceding one."

Mr. Treloar now reports further that sinking on the vein was under suspension from September 3 to 13, owing to presence of water in the bottom, and since that date a depth of 5 ft. had been sunk without finding any material improvement; no vein stuff consequently had been obtained during the first half of September. The gold cleaned up to September 13 amounted to 269 oits., derived from 115 tons of ordinary mineral broken from the backs above the 20, where the lode is large, but poor. To unwear the slopes the 30, which had been communicated with the shaft, was resumed on September 6, but the ground becoming very heavy this level had been stopped again, and a small level commenced on the right. At Holland's shaft there was no sign of water at date of writing; an old diagonal shaft, of which there is no record, and supposed at first to be Francisco Antonio's shaft, had been intersected in sinking. But the latter shaft is found to be deeper still. Excellent progress was being made in the 15 ft. levels north and south, the ground in both directions being favourable. In the former going to the Bahu veins, as well as in the branch level therefrom, lines of auriferous jacting had been met with during the last few days, many of the samples proving better than the general mineral then being raised in the Ouro Podre section. This circumstance is very gratifying, since it showed they were in auriferous ground, and might meet a good vein at any time; these lines would be extended up as soon as practicable. The present aim is to get under the site of the old workings, still several fathoms distant, with as little loss of time as possible. The directors have received a cable message from Mr. Treloar advising that the produce for the month of September amounted to about 450 oits., a result for which the shareholders will be to some extent prepared, owing to the previous advice regarding the obstruction to working on the Ouro Podre vein through water, an obstacle which the directors trust will prove but temporary.

**CAPE COPPER.**—Capt. Lanksbury, Capt. Henwood, Aug. 31: OOKIEP: Notwithstanding the hindrances we have had to encounter in the shape of an influx of water, necessitating change of bucket lift, &c., we consider good progress has been made in sinking the new shaft below the 92; the ground is still jointy, and has during the month produced some stones of copper ore. The 92 south-east of new shaft is suspended, in consequence of its unfavourable appearance; and the men are put to resume the driving of the 92 north-east of same. There is no material change to notice in the 92 east of new shaft; the ground is still unproductive, and we purpose to push on this end with all vigour. The slope in the 32 north-east of No. 36 winze is worth 9 tons of copper ore per fathom. The 80 north-east of new shaft has fallen off in value, now worth 3 tons of copper ore per fathom. The ground in the 80 north-east of No. 35 winze has been very changeable, one part of the month it was worth 4 tons of copper ore per fathom, but it now produces 1 ton. The 68 south-east of No. 31 winze has greatly improved since our last report; present forebreast yielding 6 tons of copper ore per fathom. The ground in the 68 south-east of No. 32 winze is very speedy for driving, and shows a few spots of copper ore. No 37 winze below the 68 is worth 3 tons of copper ore per fathom. No 38 winze was started to sink in unproductive ground below the 58 in the early part of the month, but became productive a few feet below the level; present bottom worth 4 tons of copper ore per fathom. The slopes show slight fluctuations at times, but on the whole they yield remarkably well.

**SPECTAKEL.**—Capt. Lanksbury, Capt. Henwood, Aug. 25: The ground in the 64 east of No. 1 winze has during the month been variable in yield, but on the whole some good stopping ground has been laid open, and the end continues to produce about 3 1/2 tons of copper ore per fathom. A new level has been started northwards near the end of the above-mentioned level, with the object of proving the extent of the productive ground in that direction. The 64 west of incline has become easier for driving, but is still unproductive. The 53 north-east has been suspended in consequence of the ground surrounding it being very poor. The slope in bottom of the 53 is producing 3 tons of copper ore per fathom.

**TRIAL MINES.**—Capt. Lanksbury, Capt. Henwood, Aug. 31: Nababep: The new trial shaft has reached a bed of rock generally composed of quartz containing traces of copper. The slope in the bottom of 17 has rather declined in value; the ground at this point contains a large proportion of magnetic iron, which renders it very difficult for dressing.—New Centre East: The ground in trial shaft has become a little harder for sinking, producing occasional stones of copper ore.—New Centre West: The trial shaft at this place has not yet reached the settled rock; the indications are very good, but beyond a few isolated or detached stones of purple copper ore nothing of importance has yet been found.

Returns: For August—Ookiep 1200 tons of 25 cent.; Spectakel, 95 tons of 35 cent.; Nababep, 32 tons of 15 cent.—Arrivals at Port Nolloth: The "Tacon" and the "S. T."—Arrivals at Swansia: The "Glendal," "Gleam," and "Ocean King."—Bills of Lading received:—480 tons of ore per "Galates," and 425 tons per "L'Esperance."—Sales of Ore: 1300 tons at 12s. per unit.

[For remainder of Foreign Mines see to-day's Journal.]



## Registration of New Companies.

The following joint stock companies have been duly registered:—

**THE WEAR SALT, WHITING, AND FIRE-CLAY GOODS COMPANY (Limited).**—Capital 5000*l.*, in shares of 10*l.*. To manufacture and sell salt, whiting, and all descriptions of fire-clay goods. The subscribers who take one share each are—R. T. Swallow, Gateshead; F. Harle, Newcastle-on-Tyne; J. Beaufort, Sunderland; A. M. Cohen, Newcastle; J. Turnbull, Chester-le-street; N. Taylor, Sunderland; C. F. Cooke, Durham.

**COLOMBIA CHEMICAL WORKS, "MULHEIM ON THE RHINE" (Limited).**—Capital 20,000*l.*, in shares of 10*l.*. To purchase and carry on a chemical business situate in Germany. The subscribers (who take one share each) are—W. C. Cutler, 25, St. James's-street; R. Hewitt, 92, Russell-street; R. Milburn, Beckenham, W. Stevenson, Ealing, J. E. Denney, Brentwood; E. James, Twickenham; T. Brooks, Plumstead.

**ALVERTON STEAMSHIP COMPANY (Limited).**—Capital 20,480*l.*, in shares of 320*l.*. To carry on a steam shipowner's business in all its branches. The subscribers are—C. H. Wallis, Cardiff, 6; W. A. Osborn, Cardiff, 6; A. E. Reed, Cardiff, 1; T. Osborn, Clifton, 2; E. C. Reed, Chadden, 1; S. Glasson, Bristol, 1; W. O. Wallis, Cardiff, 1.

**THE WALA-WYNAD INDIAN GOLD MINING COMPANY (Limited).**—Capital 75,000*l.*, in shares of 1*l.*. To acquire certain properties known as the Kareempoyah estates, situate in Wala-Wynand, Malabar, district of the Madras Presidency, with the mining rights thereunto appertaining, upon the terms of an agreement made between G. Garrett on the one part, and W. Edwards on behalf of the company, and other estates and mining rights. To carry on the business of winning and working gold, gold quartz, and other metals and minerals, preparing the same for market, and generally that of metallurgists, metal dealers, and metal workers; also planters and growers of coffee. The subscribers are—A. Catt, architect, Teddington, 20; A. L. Cox, 48, Calthorpe-street, medical student, 20; F. W. Rintoul, Camberwell, accountant, 20; L. C. Henry, 10, George-yard, accountant, 20; E. C. Burgess, Belvidere, accountant, 20; W. J. Smith, Eltham, auctioneer, 100; F. E. M. Steele, Ladywell, journalist, 20. The number of directors not to exceed ten, or be less than four. Qualification 100 shares, and the remuneration 600*l.* per annum, to be distributed among the directors.

**ILKEY GROVE GARDEN COMPANY (Limited).**—Capital 20,000*l.*, in shares of 5*l.*. Providing gardens, pleasure-grounds, and a building for social entertainments. The subscribers (who take one share each) are—L. Horner, Ilkey; M. Ford, Ilkey; W. Margerison, Ilkey; T. Scott, Ilkey; J. C. Naylor, Ilkey; W. Hirst, Ilkey; C. Moren, Ilkey.

**THE SWANSEA COMPLEX ORE COMPANY (Limited).**—Capital 50,000*l.*, in shares of 10*l.*. To manufacture spelter or zinc and other metal and substances. The subscribers (who take 10 shares each) are—S. B. Power, Swansea; F. J. Bishop, Swansea; W. Gilbertson, Pontardawe; A. Gilbertson, Swansea; F. Bishop, Red Hill; J. W. Bishop, Stoke-on-Trent; A. R. Grenfell, Windsor.

**PRITCHARD, OFFOR, AND COMPANY (Limited).**—Capital 25,000*l.*, in shares of 5*l.*. To manufacture and sell grease, oil, and lubricants of any sort. The subscribers (who take one share each) are—O. G. Pritchard, 24, Crutched Friars; G. Offor, 24, Crutched Friars; C. Offor, 16, Cavendish-road; M. Clark, Dulwich; G. Schenk, 6, Jeffrey-square; C. J. Hegan, 14, Cornhill; P. Morrison, 96, Leadenhall-street.

**THE SWANSEA TELEPHONIC EXCHANGE COMPANY (Limited).**—Capital 5,000*l.*, in shares of 10*l.*. The manufacture of telephones and telegraphic instruments. The subscribers (who take one share each) are—G. S. Davies, Swansea; H. J. Goss, Swansea; C. Fulton, Swansea; J. Legg, Swansea; B. Evans, Swansea; T. H. Davies, Swansea; J. Roberts, Swansea.

**GENERAL LAND, BUILDING, AND BRICKMAKING COMPANY (Limited).**—Capital 60,000*l.*, in shares of 1*l.*. To carry on generally the businesses of brickmakers and builders. The subscribers are—H. V. Crasswell, 38, Bernard-street, 100; W. H. Chase, 18, Queen Victoria-street, 100; W. H. Tooth, Kennington Park, 100; J. G. Lyle, 57, Bishopsgate-street Within, 100; C. Simpson, 87, Hackney-road, 100; J. J. Sanders, Stamford Hill, 100; T. Simpson, 104, Bishopsgate-street, 20.

**ANGLO-FRENCH UNION BANK (Limited).**—Capital 500,000*l.*, in shares of 20*l.*. To carry on a banking business in England, France, and elsewhere. The subscribers (who take one share each) are—C. Mackenzie, 14, Rodney-place; E. W. Adcock, 99, Westmoreland-road; C. W. Whitham, 190, Westmoreland-road; W. Lake, 26, Swinton-street; T. W. Fullelove, 38, New Cross-road; B. J. Wildbore, 9, St. Paul's-terrace; J. T. Allbutt, Putney.

**THE WINDSOR STEAM LAUNDRY COMPANY (Limited).**—Capital 5,000*l.*, in shares of 5*l.*. To carry on in all branches the business of a laundry company. The subscribers are—W. Beach, Windsor, 20; W. Berridge, Windsor, 20; T. Carter, Windsor, 20; W. H. Evans, Windsor, 30; J. Lane, Windsor, 30; J. L. Hollis, Windsor, 20; C. H. Roberts, Windsor, 20; B. Westlake, Windsor, 30.

**THE GARDEN LODGE COAL COMPANY (Limited).**—Capital 40,000*l.*, in shares of 10*l.*. To acquire the lease and business of the Garden Lodge Colliery, and all buildings, plant, stock, effects, and assets thereof. The searching for, opening, mining, working, winning, digging, raising, getting, and making into coke the produce of the said mine; manufacturing iron, and rendering merchantable all coal, cannel, shale, clay brick, earth, ironstone, iron ore and other ores, metals, and other mineral substances, &c.; and the carrying on the business of mineowners, coalowners, quarry owners, merchants, &c. The subscribers (who take one share each) are—J. Baron, Heywood, gentleman; R. Butterworth, Rochdale, cotton manufacturer; T. Chadwick, Manchester, cotton waste dealer; W. Greenwood, Todmorden, gentleman; J. Greenwood, Todmorden, gentleman; T. F. Mackison, Manchester, cotton spinner; J. Turner, Ruabon, farmer. Messrs. Butterworth, Chadwick, J. Greenwood, and Mackison are to be the first directors. The number of the members of the board must not be less than five, or more than ten. The share qualification is fixed at 50 shares.

**THE SCOTTISH PETROLEUM COMPANY (Limited).**—Capital 30,000*l.*, in shares of 10*l.*. To acquire the business of a refiner of mineral oils situated at La Courneuve, near Paris, together with the premises, plant, stock, and effects, and to continue and develop such business. The subscribers (who take one share each) are—A. Scott, St. Mary's Chambers; R. E. White, St. Mary's Chambers; J. Elder, Edinburgh; M. Wallace, 182, Upper Thames-street; G. Simpson, Edinburgh; L. Moyes, St. Mary's Chambers; G. W. Dix, Clapham.

**BRITISH AND FOREIGN BOAT LOWERING APPARATUS COMPANY (Limited).**—Capital 20,000*l.*, in shares of 1*l.*. To carry on the business of manufacturing, building, and constructing for sale apparatus for boat lowering. The subscribers (who take one share each) are—R. C. Foster, Glendore; J. Doody, Edenbridge; F. Jones, Thornton Heath; G. Cronin, 149, Great Titchfield-street; J. Best, 30, Coleman-street; C. E. Wright, 4, Great Winchester-street; J. Nicholls, 49, Redcliffe-road.

**THE MERTHYR BUILDINGS IMPROVEMENT COMPANY (Limited).**—Capital 5000*l.*, in shares of 2*l.*. To carry on all operations connected with a building society. The subscribers are—C. R. James, Merthyr, 50; D. R. Lewis, Merthyr, 50; D. Williams, Merthyr, 100; D. James, Dowlais, 25; R. Jones, Dowlais, 25; C. Harris, Merthyr, 25; J. Jones, Merthyr, 10.

**JOHN BUCKTROUT (Limited).**—Capital 10,100*l.*, in shares of 10*l.*. To acquire and continue a drysalts, dyewood cutters, and ware grinders' business at Leeds. The subscribers are—H. D. Poole, 23, Chancery-lane, 4; W. G. Smith, Weston, 1; S. R. Smith, Clifton, 1; E. J. Atkinson, Upper Norwood, 1; E. Jose, Hornsey, 1; R. E. Mudge, Hatcham-road, 1; A. Hughes, 33, Chancery-lane, 1; C. Greenwood, Highgate, 1.

**THE MOST DORE OF BOURNEMOUTH (Limited).**—Capital 75,000*l.*, in shares of 5*l.*. To acquire certain property and to carry on the business of hotel and tavern keeper, licensed victualler, &c. The subscribers (who take one share each) are C. E. Huzman, 20, Spring Gardens; T. C. Pocock, Clayham; J. L. Wanklyn, 8, Coleville-square,

J. Chambers, Homerton; W. L. Thorngood, Lonsdale Chambers; F. W. Hodges, Brixton; W. White, 4, Change Alley.

**LIDLAW AND COMPANY (Limited).**—Capital 15,000*l.*, in shares of 10*l.*. To carry on livery-stable keepers', posting, riding, and job masters' business at Bournemouth. The subscribers (who take one share each) are—E. Sanders, Bournemouth; D. G. Anderson, Ringwood; E. Offer, Bournemouth; H. Laidlaw, Bournemouth; W. B. Rogers, Bournemouth; J. C. Coats, Blandford; W. Pyle, Bournemouth.

**THE NORTON VENTILATOR COMPANY (Limited).**—Capital 120,000*l.*, in shares of 10*l.*. The manufacturing and fitting up of machinery and apparatus of any kind for the purpose of the ventilation of buildings, mines, quarries, &c. The subscribers (who take one share each) are—F. L. Norton, 50, Old Broad-street; J. Hawes, Wivenhoe; J. Harvey, Wivenhoe; A. H. W. Brown, 23, Regent-street; W. Bontill, 70, Cornhill; L. Norton, 50, Old Broad-street; J. A. Taylor, 23, Norfolk-crescent.

**THE LONDON METALLIC COATING COMPANY (Limited).**—Capital 28,000*l.*, in shares of 10*l.*. To carry on the business of coating and oxidizing metals, coating glass, crystal, porcelain, &c. The subscribers are—T. G. Walter, St. John's, 15; H. C. Barker, 8, Union-court, 5; J. Burbridge, 62, Moorgate-street, 10; E. W. Walter, Victoria Docks, 10; J. Godwin, Leadenhall Market, 10; W. F. Gordon, 12, Montague-street, 10; H. H. Thompson, 7, Tokenhouse-yard, 5.

**AMERICAN, BRITISH, AND CONTINENTAL BANK (Limited).**—Capital 1,000,000*l.*, in shares of 5*l.*. To carry on a banking business in England, America, and elsewhere, the head office to be situate in London. The subscribers (who take one share each) are—J. J. Ney, Battersea; J. F. Blake, Edith Grove; C. F. Reynolds, 11, Poultry; R. Bisset, 97, Shaftesbury-road; G. R. Brewer, St. John's; J. MacKenzie, 150, Leadenhall-street; H. P. F. Palmer, 60, Moorgate-street; L. Breslauer, 30, Great St. Helen's.

**JOHN HALL (Limited).**—Capital 25,000*l.*, in shares of 250*l.*. To acquire and continue in Lancashire a fancy quilting, fancy goods, cotton manufacturing, and cotton spinning business. The subscribers (who take one share each) are—J. Hall, Baldingstone; J. W. Hall, Bury; J. Howorth, Bury; E. Lord, Blackley; J. P. Brigg, Huddersfield; J. Phillips, 22, Laurence-lane; R. Nelson, Huddersfield.

**THE PHOTO CERAMIC COLOURING COMPANY (Limited).**—Capital 10,000*l.*, in shares of 50*l.*. To acquire and use an improved process for ornamenting fettle wares, glass, and metallic surfaces, and to manufacture and sell china, porcelain, glass, metallic, and other substances. The subscribers are—F. Langworth, Lipnook, 16; F. Puttee, 148, Fenchurch-street, 10; H. W. Irvin, Clerkenwell, 1; W. Lichfield, 23, Burnt Ash Hill, 10; C. J. Aman, Flint, 10; W. F. Nuttall, Baron's Court, 1; A. Harrison, 51, Ludgate Hill, 1.

**THE TONICINE COMPANY (Limited).**—Capital 10,000*l.*, in shares of 1*l.*. To manufacture tonicine and carry on the business of wine and spirit merchants, tea dealers, &c. The subscribers are—G. M. Harvey, Streatham, 200; A. Parick, Anerley, 200; J. C. Grove,

Forest Hill, 100; J. E. Naylor, Southsea, 200; E. F. Fortune, Wick, 200; T. Cantrell, Upper Norwood, 200; F. W. Mansell, 43, Fawcett Buildings, 20.

**PHENIX GOLD MINING COMPANY (Limited).**—Capital 150,000*l.*, in shares of 1*l.*. To adopt and carry into effect an agreement made between W. Lonsdale and H. T. McNeale as trustee for the company and a further agreement between J. Ryan and W. Lonsdale and mining rights of the vendors, the whole situate in South-West Wynaad district of the Madras Presidency. To work the gold mines and reefs under said agreements, and any other gold mines, reefs, and mining rights which may from time to time come into possession of the company. To crush, wash, smelt, reduce, and develop the resources of the company. The subscribers are—T. Glover, Sydenham Hill, colonel, 1; L. V. Helms, Thornton Heath, 50; J. Bell, Blackheath, gentleman, 1000; R. McIlraith, 3, Fenchurch-avenue, merchant, 1000; W. Nicol, 3, Fenchurch-avenue, merchant, 1000; J. D. Syke, 2, Serjeant's Inn, solicitor, 500. Robinson, each directors' qualification being fixed at 250 shares.

**THE EUREKA (NEVADA) SILVER MINING COMPANY (Limited).**—Capital 100,000*l.*, in shares of 1*l.*. To purchase or otherwise acquire several mines or mineral properties comprised in an agreement made between P. Trentler and J. Stevenson; also between C. C. B. and J. Stevenson, situate in the United States, called Bald Eagle Mine, White Eagle Mine, Eagle's Nest Mine, and the Williams series of mines. The working, raising, winning, washing, and processing of ores, metals, minerals, and mineral deposits, and otherwise developing the lands, mines and mineral properties acquired by the company. The manufacturing, smelting, reducing, and rendering merchantable all ores, minerals, and produce, and generally to carry on operations connected with silver and gold mines. The subscribers (who take one share each) are: J. Stevenson, 26, Suffolk-street, secretary; T. Russel, 35, Queen Victoria-street, accountant; A. P. Barr, 43, New Broad-street, accountant; A. H. Baily, Belsize-park, gent.; J. Tobin, 187, Tottenham-road, gentleman; A. S. Aylmer, 53, Moorgate-street, clerk. The number of directors must not be less than three or exceed seven. Remuneration 1000*l.* per annum, 250*l.* of this to the Chairman.

**THE ROTHER IRONWORKS COMPANY (Limited).**—Capital 100,000*l.*, in shares of 10*l.*. To acquire certain ironworks situate at Rye, and continue the business of the same. The subscribers (who take one share each) are—F. Bellingham, Rye; H. Barra, Rye; J. S. V. Rye; J. Brown, Bexhill; G. W. Veness, Hastings; G. A. Thorneycroft; J. C. Vidler, Rye.

**PARIS' LEICESTERSHIRE BANKING COMPANY** is now registered as a limited liability company, also the NORTHAMPTON BANK COMPANY.

## FRANCIS MORTON AND CO., LIMITED, LIVERPOOL

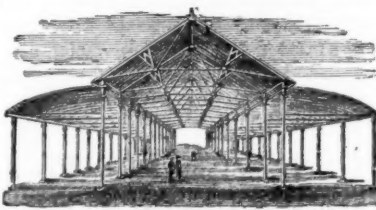
MANUFACTURERS OF

GALVANISED CORRUGATED IRON ROOFS, BUILDINGS, AND SHEDDING,

WHICH THEY HAVE EXTENSIVELY ERECTED FOR THE REQUIREMENTS OF

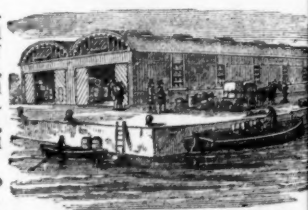
Forges, Rolling Mills, Puddling Sheds, Ironworks, and Collieries,

Erected Complete in this Country, or prepared to Plan for Erection Abroad.



OPEN SHED FOR COVERING LARGE AREAS.

GALVANISED OR PAINTED CORRUGATED IRON ROOFING PLATES AND TILES. HEAVY CORRUGATED IRON PLATES for fireproof floors, roadways, parapets, &c. (for producing which F. M. and Co. have recently laid down powerful Hydraulic Machinery). Wrought-iron Tanks, Guttering, and General Constructional Wrought Ironwork. DESIGNS PREPARED, AND ILLUSTRATED DESCRIPTIVE CATALOGUES FORWARDED ON APPLICATION.



GENERAL STORE FOR WHARF, ETC.

London Office: 1, Delahay Street (first door out of Great George Street), Westminster, S.W.

SAMUEL DENISON & SON'S  
WEIGHING MACHINES

ARE THE BEST IN THE MARKET FOR

ACCURACY, DURABILITY, AND DESIGN.

SPECIALLY ADAPTED FOR COLLIERIES, MINES, IRONWORKS, BRICKWORKS, AND RAILWAYS.

**SPECIALITE!!—Pit-bank Weighing Machines, with our latest improved Double Steelyard Indicator. NO LOOSE WEIGHTS. Simplest and most perfect ever brought out.**

Works: OLD GRAMMAR SCHOOL FOUNDRY, LEEDS.

## GALVANIZED IRON BUILDINGS AND IRON ROOFING.

**SAMUEL C. HEMMING AND CO.,**  
47, MOORGATE STREET, LONDON,

Manufacturers of every description of IRON BUILDINGS and IRON ROOFING, beg to draw attention to their Speciality of Construction of Iron Buildings, now becoming so generally approved by the introduction of galvanized iron louvres to open and shut, as per sketch (verandah may be added). Any of the spaces in walls can be made into doors, or they can be filled in from top to bottom with galvanized corrugated iron, or with galvanized iron louvres or windows, and without light and ventilation in roof.



WORKS: OLD FORD, LONDON.

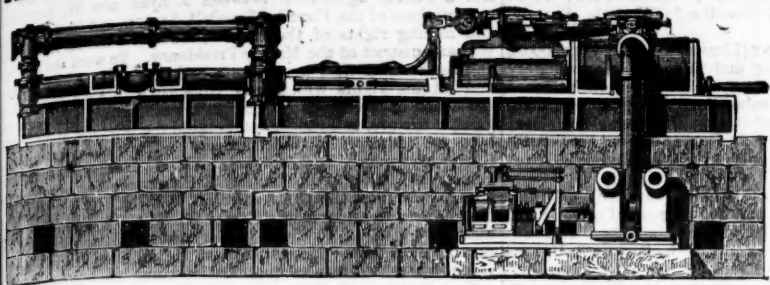
Numerous drawings may be seen at the Office, 47, MOORGATE STREET, LONDON.

TESTIMONIALS FROM ALL PARTS OF THE WORLD. ESTABLISHED 1851.



# HATHORN, DAVEY, AND CO., LEEDS.

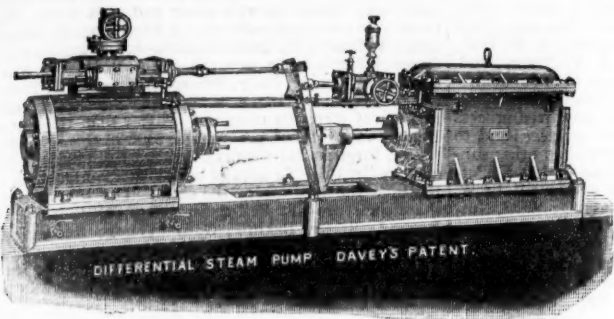
The DIFFERENTIAL PUMPING ENGINE (Davey's Patent).



AS APPLIED UNDERGROUND.

H. D. and Co. have facilities for supplying very powerful Pumping Plant at short notice.

30,000-h.p. in successful work, in all sizes.



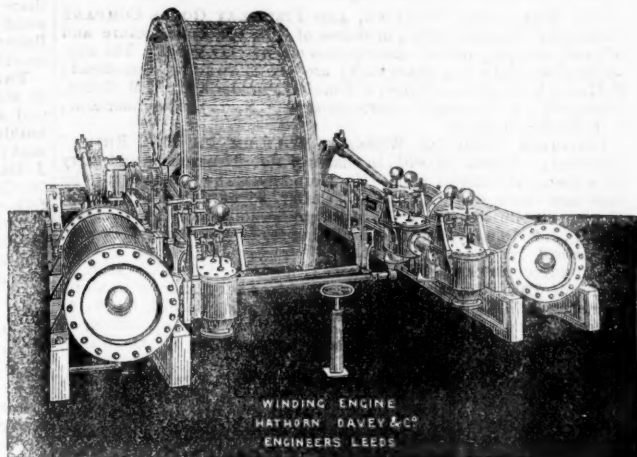
GOLD MEDAL  
PARIS,  
1878.

MAKERS of all  
kinds of  
STEAM  
AND

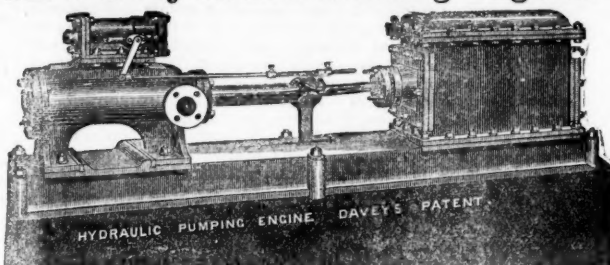
HYDRAULIC  
MACHINERY

FOR  
MINES,  
AIR COMPRES-  
SORS,  
MAN ENGINES,  
CAPSTANS,  
&c., &c.

CATALOGUES ON APPLICATION.



Steam and Hydraulic Winding Engines.



Hydraulic Pumping Engines for dip working in Mines, &c.

## CLAYTON AND SHUTTLEWORTH,

STAMP END WORKS, LINCOLN, & 78, LOMBARD STREET, LONDON.

GOLD MEDALS, AND OTHER  
PRIZES,

Have been awarded to CLAYTON AND SHUTTLEWORTH at the various International Exhibitions of all Nations, including  
LONDON, 1851, 1862,  
PARIS, 1855, 1867, 1878,  
VIENNA, 1857, 1866, 1873,  
for their

STEAM ENGINES (Portable or Fixed)  
THRESHING MACHINES.  
GRINDING MILLS  
TRACTION ENGINES, &c.

Catalogues in English and in all the Continental Languages free on application.



The Royal Agricultural Society of England have awarded

EVERY FIRST PRIZE TO CLAYTON AND SHUTTLEWORTH

For Portable and other Steam Engines since 1863, and Prizes at every meeting at which they have competed since 1849.

## MANCHESTER WIRE WORKS.

NEAR VICTORIA STATION, MANCHESTER.

(ESTABLISHED 1790).

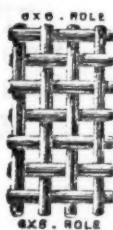
JOHN STANIAR AND CO.,

Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for  
LEAD AND COPPER MINES.

Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper

EXTRA STRONG PERFORATED ZINC AND COPPER RIDDLES AND SIEVES

Shipping Orders Executed with the Greatest Dispatch.



TO HEADS OF FAMILIES AND PERSONS FURNISHING.

THOMPSON AND CO.

SUPPLY

THREE PARCELS OF CROCKERY,

AS UNDER:—

- No. 1.—One DINNER SERVICE, Marone, Emerald, Blue, or Pink and Gold, for Twelve Persons; one BREAKFAST SERVICE, same choice of Colours and Gold; one TOILET SET, with Slop Jar and Sponge Tray, same choice of Colours and Gold. FREE ON RAIL FOR £10. Quotations for goods of higher quality on application.
- No. 2.—One DINNER SERVICE, Ruby, Emerald, or Blue and Gold; one TEA SERVICE (China), same choice of Colours and Gold; one TOILET SET, same choice of Colours and Gold. FREE ON RAIL FOR £2 5s.
- No. 3.—One DINNER SERVICE, Emerald or Blue, not Gilt; one TEA SERVICE (Earthenware), ditto ditto; one TOILET SET ditto ditto; one SET JUGS, ditto ditto. FREE ON RAIL FOR £1 5s.

The Goods are of sound quality and sterling value, and the difference in price from what is usually charged in shops is the cost to the public of retail profits and credit.

Letters to THOMPSON AND CO., STOKE-ON-TRENT.

Cheques crossed Manchester and Liverpool District Bank, Burslem.



HULME & LUNDS SPECIALTIES.  
DONKEY PUMPS, MINING PUMPS,  
HORIZONTAL PUMPS, TAR PUMPS,  
AIR COMPRESSORS,  
FIRE ENGINES, STEAM ENGINES,  
WILBURN IRON WORKS,  
SALFORD, MANCHESTER.

W. F. STANLEY

MATHEMATICAL INSTRUMENT MANUFACTURER TO H.M.'S  
GOVERNMENT, COUNCIL OF INDIA, SCIENCE AND  
ART DEPARTMENT, ADMIRALTY, &c.  
MATHEMATICAL, DRAWING, and SURVEYING INSTRUMENTS of every  
description, of the highest quality and finish, at the most moderate prices.  
Price List post free.  
ENGINE DIVIDER TO THE TRADE.

ADDRESS—GREAT TURNSTILE, HOLBORN, LONDON, W.C.

MAPS OF THE MINES, AND OF UTAH TERRITORY.

FROISETH'S NEW AND REVISED MAP FOR 1875,—  
Size 40 by 56 inches, scale 8 miles to the inch. Handsomely engraved, co-  
loured in counties, showing the Towns, Settlements, Rivers, Lakes, Railroads,  
Mining Districts, &c., throughout the Territory, and all the Government Surveys  
to date. Mounted on cloth, £2; half-mounted, £1 12s.; pocket form, £1.  
Also, GENERAL MINING MAP OF UTAH, showing twenty-eight of the  
principal Mining Districts adjacent to Salt Lake City, and location of the most  
prominent mines. Price, pocket form, 6s.  
Also, NEW MAP OF LITTLE AND BIG COTTONWOOD MINING DISTRICTS  
showing the location of over Four Hundred Mines and Tunnel Sites, together  
with the Mines Surveyed for United States Patent. Price, sheets, 6s.; pocket  
form, 8s.  
For sale, and supplied by—  
TURNER and Co., 57 and 59 Ludgate Hill, London.  
B. A. M. FROISETH, Salt Lake City, Utah, U.S.

MR. WILLIAM BREDEMAYER, MINING, CONSULTING  
and CIVIL ENGINEER, U.S. MINERAL SURVEYOR for UTAH and  
IDAHO. NOTARY PUBLIC.  
Geological examinations; reports on mining properties; surveys mines, rail-  
roads, and canals, and superintends the workings of the same; prepares esti-  
mates and plans for opening and working mines. Expert on mining questions  
before the Courts. Address, P.O. Box 1157, Salt Lake City, Utah.

TO PARENTS AND GUARDIANS.

AN ELIGIBLE OPPORTUNITY is now offered for the  
SETTLEMENT of an ACTIVE YOUNG GENTLEMAN IN CANADA.  
He will be enabled to obtain his profession as a Solicitor in five, or if he be a Gra-  
duate in three years. Cost of living about £150. In the meantime he will have  
active work, and obtain a knowledge of the Dominion, which is destined to be-  
come one of the most prosperous of the Colonies. Premium, £100 sterling.  
HERBERT C. JONES,  
32, Wellington-street, Toronto. Canada Land and Loan Agency.

ALEX. DEL MAR,  
MINING ENGINEER,

Formerly Director of the Bureau of Statistics of the United States, Superin-  
tendent of the United States Special Commissioners of Mines, Mining  
Commissioner for the United States Monetary Commission,  
author of a "History of the Precious Metals," &c.,  
216, SANSOME STREET, SAN FRANCISCO, CALIFORNIA.  
Mining Properties surveyed and reported upon. Assays and quantitative  
analyses made of ores, &c.

PIERCE S. HAMILTON, PRACTICAL GEOLOGIST  
SURVEYOR, AND MINING ENGINEER AND AGENT, OFFERS HIS  
SERVICES in either of these capacities to those interested or desirous of investing  
in MINING PROPERTY in the PROVINCE OF NOVA SCOTIA or elsewhere in  
the DOMINION OF CANADA.  
Having for years filled the administrative position of Chief Commissioner of  
Mines for Nova Scotia, and having both before and afterwards been himself largely  
engaged in Mining operations, Mr. HAMILTON has had exceptionally good oppor-  
tunities of informing himself as to the variety, extent, and character of the mine-  
ral deposits of that Province, and as to the most economical and effective method  
of working them.  
ADDRESS—PIERCE S. HAMILTON, HALIFAX, NOVA SCOTIA,  
DOMINION OF CANADA.

Just published, cloth limp, price 1s. 6d.,  
THE COLIERY READY-RECKONER AND WAGES  
CALCULATOR.  
By JAMES IRELAND  
"Will be the means of preventing many disputes between pay clerks and  
colliers."—Mining Journal  
To be had on application at the MINING JOURNAL Office, 25, Fleet-street E.C.

THE IRON AND COAL TRADES' REVIEW,  
The IRON AND COAL TRADES' REVIEW is extensively circulated amongst the  
Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron  
and coal districts. It is, therefore, one of the leading organs for advertising every  
description of Iron Manufactures, Machinery, New Inventions, and all matters  
relating to the Iron Coal, Hardware, Engineering, and Metal Trades in general.  
Offices of the Review: 7, Westminster Chambers, S.W.  
Remittances payable to W. T. Fringis.



## THE GRAND PRIZE, THE TRIPLE AWARD.

Gold Medal, Silver Medal, and Honourable Mention awarded at the Paris Exhibition, in competition with all the World,  
FOR MY LATEST PATENTED STONE BREAKERS AND ORE CRUSHERS.

Stones broken equal, and Ores better, than by hand, at one-tenth the cost.

HIGHEST AWARDS  
FROM THE  
MINING INSTITUTE  
OF CORNWALL.

# H. R. MARSDEN,

ORIGINAL PATENTEE AND SOLE MAKER OF BLAKE-MARSDEN

PULVERISERS,  
BONE MILL L.S.,  
MORTAR MILLS,  
&c., &c.

## Improved Patent Stone Breakers & Ore Crushers

New Patent Reversible Jaws,  
in Sections with Patent  
Faced Backs.

NEW PATENT ADJUSTABLE  
TOGGLES.

OVER 2750 IN USE.

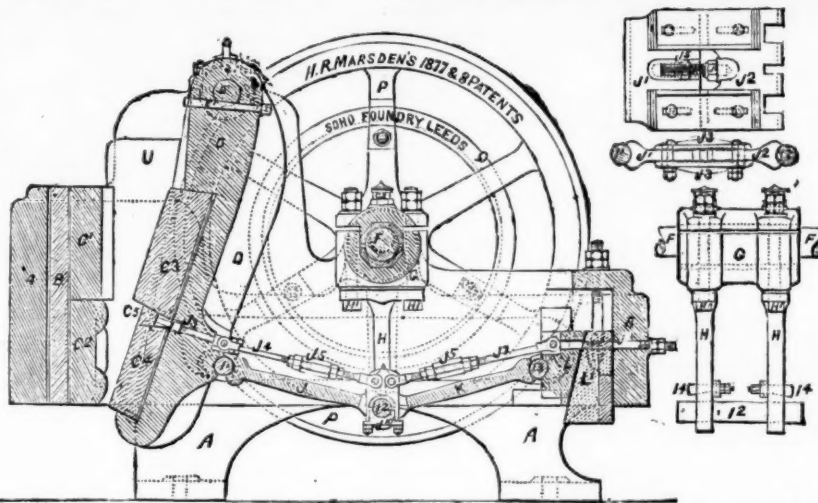
NEW PATENT WROUGHT-IRON CONNECTING  
ROD.

New Patent Draw-back  
Motion.

NEW PATENT STEEL TOGGLE BEARINGS.

60

PRIZE MEDALS.



DEAR SIR,—We have adopted your Stone Breaker  
many of the mines under our management, and  
pleased to be able to state that they have in all  
given the greatest satisfaction.

We are, yours faithfully,

JOHN TAYLOR AND SON

H. R. Marsden, Esq.,  
Soho Foundry, Meadow-lane, Leeds.

St. John del Rey Mining Company (Limited)  
A SAVING OF FIFTY-FIVE HANDS BY THE USE  
ONE MEDIUM-SIZED MACHINE.

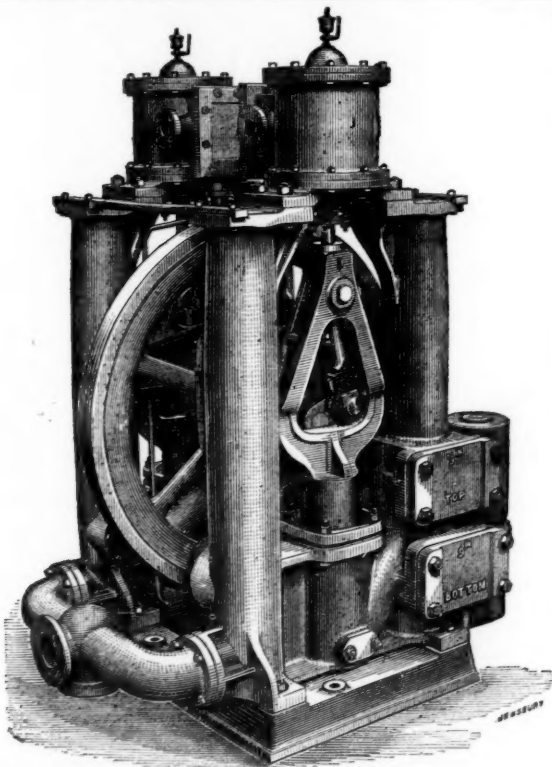
BLAKE'S STONE BREAKER.—Statement made by the  
Managing Director of the St. John del Rey Mining Company  
Mr. John Hockin, with regard to six months' practical  
working of Blake's Stone Breaker, affording facility  
judging of the relative economy of machine and  
labour in this kind of work, and also of the cost of getting  
the Stone Breaker to work in difficult places. The  
paid to Mr. Marsden for the machine referred to by  
Hockin was £180, and adding to this the cost of engine  
carriage, and fixing, the aggregate cost to the company  
of the Breaker in working order was £250. By this  
the company is enabled to dispense with the labour of  
people, the value of which is £800 per annum. The  
of working the machine could not be more than the  
of about five men (the machine requires but one man  
feed it, so that the rest would be for engineer, fuel,  
&c.), and allowing for interest on outlay and for repairs  
when necessary, the saving must be enormous.—*Min.*  
*Journal.*

GREATLY REDUCED PRICES ON APPLICATION.

ALL BEARINGS are renewable, and made of H.R.M.'s Patent Compound ANTIFRICTION METAL.

CATALOGUES, TESTIMONIALS, &c.

H. R. MARSDEN, SOHO FOUNDRY, LEEDS.



STEAM PUMPS for COLLIERY PURPOSES, specially adapted  
for Forcing Water any height; also for Sinking; and for Feeding  
Boilers.

JOHN CAMERON has made over SIX THOUSAND.

WORKS OLDFIELD ROAD, SALFORD, MANCHESTER.

### ASBESTOS.

ASBESTOS ENGINE PACKING,  
ASBESTOS MILLBOARD JOINTING,  
ASBESTOS BOILER COVERING,  
ASBESTOS CEMENT,  
ARE UNRIVALLED.

Sole Patentees and Manufacturers:

THE PATENT ASBESTOS MANUFACTURE CO. (LIMITED),  
31, ST. VINCENT PLACE, GLASGOW,  
AND 10, MARSDEN STREET, MANCHESTER.

From whom Price Lists and all information can be had.

\* \* LOSS OF TIME IS LOSS OF MONEY!  
ACCIDENTS CAUSE LOSS OF TIME  
And may be provided against by a Policy of the  
RAILWAY PASSENGERS ASSURANCE COMPANY.  
The oldest and Largest Accidental Assurance Company.  
The Right Hon. LORD KINNAIRD, Chairman.  
SUBSCRIBED CAPITAL £1,000,000  
MODERATE PREMIUMS.  
BONUS ALLOWED TO INSURERS OF FIVE YEARS STANDING.  
Fixed sum in case of death by accident, and a weekly allowance in the event of  
injury.

ONE MILLION AND A HALF  
HAS BEEN PAID AS COMPENSATION.  
Apply to the Clerks at the Railway Stations, the Local Agents, or  
64, CORNHILL, LONDON.  
WILLIAM J. VIAN, Secretary

MONEY LENT, at EIGHT, NINE, and TEN PER CENT., on  
FIRST MORTGAGE of FREEHOLDS for IMPROVEMENTS and  
STOCKING, said freeholds in the Province of MANITOBA.  
Address, HERBERT C. JONES, Solicitor, 20, Masonic Hall, Toronto.

## THE "CHAMPION" ROCK BORE

MINE AND QUARRY STANDS, STEEL DRILLS, SPECIALLY PREPARED INDIARUBBER HOSE, TESTED  
IRON PIPES, &c.



### Air-Compressing Machinery,

Simple, strong, and giving most excellent results, and  
ELECTRIC BLASTING APPARATUS.

Full particulars of rapid and economical work effected  
by this machinery, on application.

R. H. HARRIS, late

ULLATHORNE AND CO., 63, QUEEN VICTORIA STREET, LONDON.

## JOHN MARSDEN,

MANUFACTURER OF

## Air Tubing and Improved Brattice Cloth

Tarred, Oiled, and Non-Inflammable.



THE OILED CLOTH IS ESPECIALLY RECOMMENDED FOR DAMP MINES, AND  
ALSO A GOOD COVERING FOR SHEDS.  
THE NON-INFLAMMABLE FOR THE MORE DANGEROUS MINES.

Samples and prices free, on application at the Works,

VARLEY STREET, OLDHAM ROAD  
MANCHESTER.

GOLD MEDAL AWARDED, PARIS EXHIBITION 1878.

## THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.

CAST STEEL FOR TOOLS. CHISEL. SHEAR. BLISTER. & SPRING STEEL  
MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYS.

LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

SHEAF WORKS & SPRING WORKS, SHEFFIELD

LONDON OFFICES—30, CANNON STREET, E.C.

PARIS DEPOT—12, RUE DES ARCHIVES.

BOSTON, MASS., U.S.—40, KILBY STREET

## J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),

Manufacturers of

### CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPAD  
FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS,  
RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions  
WELDED STEEL CHAINS FOR CRANES, INCLINES, MINES, &c.,  
MADE ALL SIZES.